

AMERICAN ARTISAN

FEBRUARY 1956

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RESIDENTIAL AIR CONDITIONING WARM AIR HEATING SHEET METAL CONTRACTING



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READY TO SUPPLY YOU WITH
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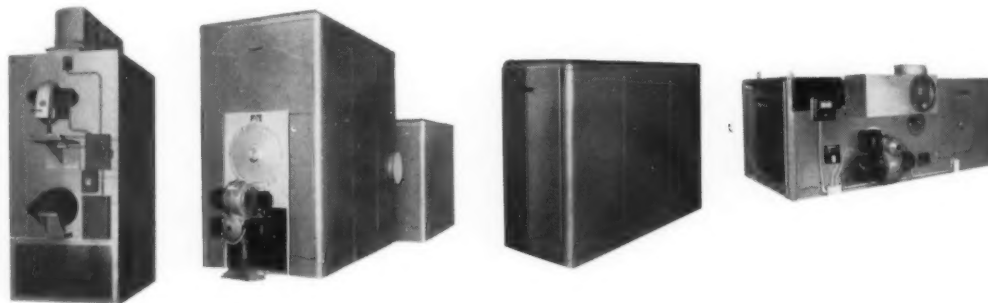
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Remember this important fact . . . behind your J-C jobber stand the extensive plant facilities and engineering resources of the Jackson & Church organization . . . your assurance of dependable, efficient, economical heating equipment.



America's largest and most complete warm air heating line.

J-C

JACKSON & CHURCH

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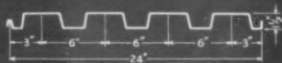
SAGINAW, MICHIGAN

The "ABC's" of
Milcor Steel
Roof Decks



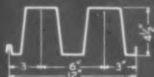
New "A" Section

The standard of the industry for closed-rib decks. Now 24 in. wide.



New "B" Section

Wide rib distributes metal for greater structural efficiency — gives higher section properties per pound of steel.



New "C" Section

Carries normal roof loads over spans up to 20 feet! Offers freedom of design.



M-107B

Now! A third type of Milcor Steel Roof Deck

*Milcor Type C Roof Deck Provides
Great Strength for Long Spans*

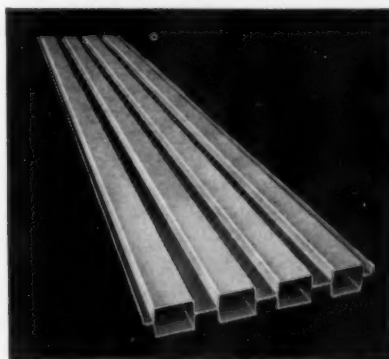
New Milcor Type C Roof Deck carries normal roof loads over spans up to 20 feet — requires fewer structural supports and permits greater architectural freedom. Its strength comes from its 4½-inch depth and from its efficient design.

Type C Deck is made 12 inches wide so that two men can handle and place it without special equipment. It is available in 12- to 18-gauge steel — painted with a baked-on enamel primer or TI-CO galvanized.

Interlocking side joints can be mechanically fastened together so that concentrated loads are distributed over two or more panels. Joints may be caulked in factory or field to eliminate the cost of a built-up vapor seal and to increase fire safety.

Now the Milcor family of steel roof decks offer you a wide choice of styles and gauges to meet every job condition efficiently and economically. Catalog No. 620-6 available upon request.

MILCOR® Roof Deck



MILCOR CELLUDECK

is made by welding together sections of "B" and "C" roof deck and flat plates into various combinations, providing cellular deck plates of exceptional strength to carry normal roof loads over great spans. Ask for Catalog No. 270.



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AMERICAN ARTISAN

FEBRUARY 1956

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Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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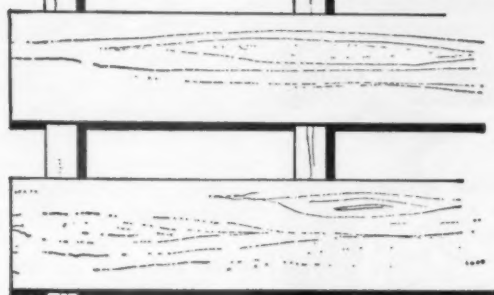


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**"Best bet for profits on
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Mueller Climatrol Combination year-round air conditioner

IT HEATS! IT COOLS! This compact, competitively priced Mueller Climatrol packs sales-winning magic. Just what you need to blast off your share of profits in the home building season ahead.

IT'S A FACT! Year-round air conditioning has irresistible appeal. Prospective home-owners respond to Mueller Climatrol quality. They go for the economy of possible *step-at-a-time* installation. Start with just the heating unit, combination casing and ductwork . . . add cooling later.

THE SIZE IS RIGHT! In heating, it's 110,000 Btu input with gas or oil. Choice of 2 or 3 hp cooling. Cooling may be ordered less the high side for air cooled applications. Unit is 60 $\frac{3}{8}$ " high, 47 $\frac{1}{16}$ " wide, 28 $\frac{1}{2}$ " deep. Installation is easy — just as you'd expect with any Mueller Climatrol.

Write today for all the facts — selling features and specifications. Mueller Climatrol, 2030 W. Oklahoma Avenue, Milwaukee 15, Wisconsin.

Mueller Climatrol

... sales are turning greener every day

the editor's notebook

Thumbing Through This Month's Artisan

... we lead off, appropriately, with the launching of Operation Home Improvement, with S. W. Reid's article, *Upgraded Modernization Job Gives New Look to Old House*. Beginning a new series based on actual interviews with dealers, this month's discussion deals with the problems involved in converting from gravity heating to year 'round air conditioning in a 32 year old two story house. Beginning with the gathering of facts, load calculations and preparation of a sales presentation, the author takes us through the system design and installation, using the old equipment wherever possible.

Control

... and we follow the important developments in room temperature control in the article, *Room Thermostat—What Can It Do?* We see how various improvements were added to the control device to provide more balanced room air temperatures during cold weather, and we are told of the penalties which accompanied the improvements, giving consideration to various methods of overcoming disadvantages such as the temperature droop condition which is often the result of using oversized heater coils in the thermostat to sensitize the bimetal strip.

Selling

... we meet Robert G. Mihan, merchandising consultant, whose tested suggestions for building sales

INCREASE EQUIPMENT SALES ...cut down delivery costs

Sentry ODF® Tank Gauge tells drivers what they want to know
at point of delivery!



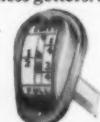
ONLY *Sentry* OFFERS SUCH A COMPLETE LINE
OF DIRECT AND REMOTE READING TANK GAUGES

Above is SENTRY'S newest — The ODF At-A-Glance tank gauge that's setting new records in building sales and customer goodwill. Located outside of building at fill pipe, this easy-to-read weather-proof gauge shows the exact oil level in the indoor tank. Saves costly time consuming trips to basement, unnecessary hose unreeling and eliminates over-flow. Permits delivery without disturbing customer.

Other constant-register SENTRY gauges include combination tank and remote reading, barrel gauges, direct reading, and gauges for stove and space heater tank. Write today for full information about these fast moving business getters. Advertising aids available.



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Sentry At-A-Glance tank gauge



Sentry superior quality Thermo-Gauge



On guard—
24 hours a day

KRUEGER *Sentry* GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

(continued)

volume through better merchandising begin in this issue with the article, *Expanded Market Presents Challenge to Good Salesmanship*. Artisan's Clinic for Advanced Salesmanship stresses the growing need for better selling techniques which can be realized through methods developed by the author in his travels throughout the country conducting sales training programs for dealers and their salesmen. Interesting surveys are outlined which disclose not only the need for more aggressive selling but also some methods of gathering leads for heating and cooling sales.

Dust

... and we are told what to consider in making bids in a profitable field for contractors, in John M. Kane's two part article, *Here Are Tips On Selecting Dust Control Equipment*. We examine dust and gas stream characteristics and applications for collecting devices as a basis for selection of the proper control equipment. Concentrations and particle sizes are tabulated and various types of collectors are illustrated in actual operation to familiarize the contractor with the variables he will encounter in his pre-bid investigations.

How to Answer Slurs On Warm Air Heating

EVERY so often, some wet heat equipment manufacturer starts to fling mud at the warm air heating system. O. H. Nelson, Minneapolis dealer, writes us about a recent mailing by a manufacturer of wet heat equipment in which



Word Gets Around!

PEERLESS

IS THE COMPLETE LINE
FOR YEAR 'ROUND PROFITS!

PEERLESS Winter Air Conditioning

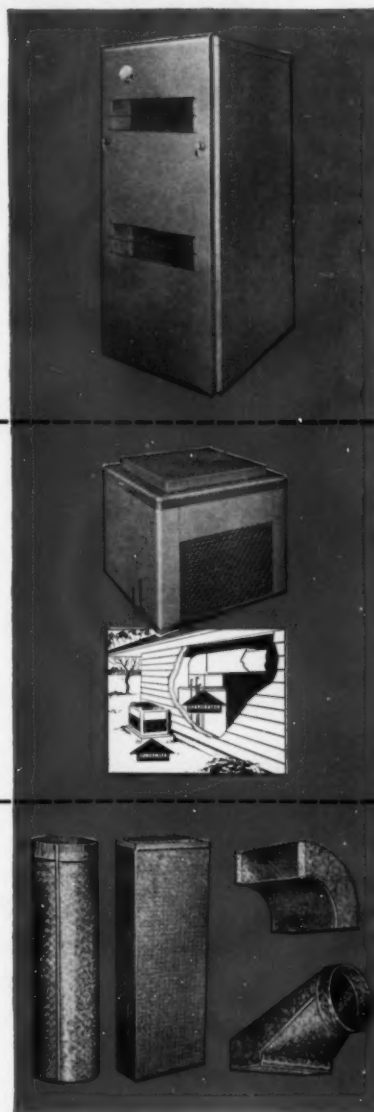
- Basement or utility room "Versat-All" gas or oil-fired winter air conditioners . . . "C" series with "decorator" touch.
- New beautifully-designed Gravity Models.
- Minimum space requirements with the heat-pack "Horizontals."

PEERLESS Summer Air Conditioning

- A brand-spanking new "Clima-Twin-Aire" remote evaporator air-cooled conditioner.
- "Clima-Twins" . . . beautiful companion heating and cooling units.
- Economy-minded "Clima-Twin-Zone" air-cooled conditioner.
- Air-cooled and water-cooled models for every requirement.

PEERLESS "Master-Fit" Fittings

Heating contractors save time, money and material with cartoned Peerless "Master-Fit" galvanized duct, pipe and fittings . . . die-cut and prefabricated. Pipe is available in "snapipe" or "acme" seam, 2, 2½ and 5 ft. joints.



PEERLESS

FURNACE & FOUNDRY, INC.

1853 Ludlow Avenue • Indianapolis 7, Indiana

Famed for Quality . . . over 55 years!

the editor's notebook

(continued)

the manufacturer incorrectly quotes a bulletin published in 1939. This appears to be a revival of the same material presented in a southeastern New York city about two years ago by a "misinformed" editor of a daily newspaper. At that time I wrote an open letter to this editor — in October 1953 — and I backed up my open letter with two additional pages of documented facts and figures from leading authorities on the subject of air flow and warm air heating in particular. I even had letters from the authors of the quoted bulletins denying the misquoted statements.

I've sent Mr. Nelson copies of the information and if anyone else is running across this type of slander by wet heat equipment manufacturers, write me and I'll send you all the ammunition you need to knock it back where it belongs.

Demand for Steel Continues to Grow

PRODUCTION is on the increase in almost every industry, but to learn that 1955's output of 116 million tons of steel isn't enough to meet the needs of our nation's demand for products is certainly encouraging to the sheet metal and air conditioning industry. Steel production in 1956 is expected to increase to 126 million tons.

Nine Million New Jobs Since World War II

NINE MILLION new jobs have been opened up by industry since World War II — not including agriculture or government jobs — according to an investigation by the Chamber of Commerce of the

meriting trust *



* Nu-Way oil burners

Meriting trust. That's how Webster defines "dependability." That's how customers describe Nu-Way Burners. Dependable components are used throughout, production run after production run.

Dependable motors. Dependable transformers. Dependable pumps. Every purchased part is built by suppliers of known quality reputations. No substitutes. Only the finest materials. In fact, some people think we carry this fanaticism about quality too far. Maybe we do. All we know is — our customers seem to like this "obsession" we have. They know they can trust Nu-Way to build burners that won't let them, or their customers, down. That is the basic fact to remember about Nu-Way Burners — they're dependable. They **merit your trust.** Nu-Way Corporation, Dept. AA-256, Rock Island, Illinois.

the editor's notebook

(continued)

United States. What I would like to know — and I assume you would, too — is how many of these jobs were in the warm air heating, residential air conditioning and sheet metal field? When I queried the Chamber on this subject, they were unable to tell me and, I am sure, both you and I understand how difficult such an assignment could be, but what would be even more interesting is to know how we stacked up with other industries. It is my feeling that we did better than average. The Chamber reports that the biggest boosts in jobs came in retail trades, construction and service industries. That's us!

Stainless Steel To Be Made With Less Nickel

FOR MANY years now, there has been a short supply of nickel, one of the essentials in stainless steel manufacture. Every effort to increase the supply of nickel has resulted in an increase in the use of stainless steel. Thanks to Dr. Dennis J. Carney, United States Steel Corp., a way has been found to produce stainless steel with considerably less nickel than has been required for standard production methods. After further studies and adoption of Dr. Carney's discovery, the current supply of nickel will make it possible to produce twice as much stainless steel with the same amount of nickel.

A copy of the technical paper by Dr. Carney was sent me, and in examining the technique used in the experiments, I noticed that the new technique makes it possible to introduce a larger volume of nitrogen into the steel. Studies on the corrosion, welding and temperature

Wherever maximum
production
is a "must"...

the New

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SUPER-SPEED "20"

ALL the advantages of
the standard Lockformer . . . same
ruggedness and long life, same
dependability, same guarantee!

PLUS New super-speeds up
to 75 feet per minute . . . New
larger work table and guiding
surface area . . . New single panel,
force-feed lubrication.

Super-Speed "20"
One Man With A Lockformer Makes More Pittsburgh
Locks Than Sixteen Men With Eight Brakes



*Designed not only to deliver super-speed
production, but to stand up, day in and
day out, under the additional loads
and speeds incurred. The new Lockformer
Super-Speed "20" is a heavy-duty, production
type machine in every sense of the word.*

Write for full information today.

THE LOCKFORMER CO.

4615 WEST ROOSEVELT ROAD

CHICAGO 50, ILLINOIS

the editor's notebook

(continued)

properties of this new steel are underway, and when they are available I'll report them to you. Any special care required or limitations uncovered will be covered in our usual editorial presentation of new information.

Sees 1000% Increase In Cooling Market

A 1000 percent increase in sales is a good thought anytime, and according to J. H. Gauss, manager of marketing, General Electric Co., this is what we can expect in the residential air conditioning market within the next 10 years. Mr. Gauss feels that an annual sale of 1,000,000 central systems will be the rule in 1965. This is good news to dealers who are now building their sales and service departments and will serve to influence those few dealers who have been waiting to see where central residential cooling is going.

Market analysis by American Artisan's market research department confirms this rise in sales volume. We support Mr. Gauss' opinion and that of other industry leaders who are making plans for serving customers in 1956 and every year thereafter. The amount of money going into product development verifies my confidence in the future of central year 'round air conditioning equipment.

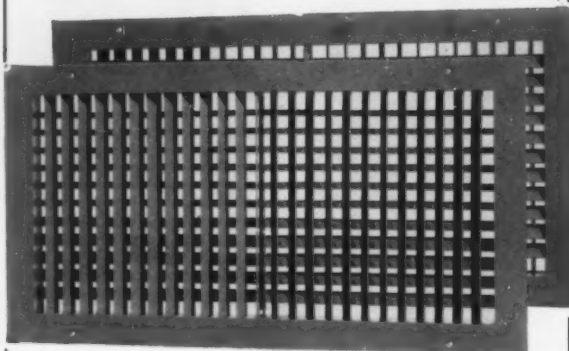
Sees Sharp Rise In Living Standard

SPEAKING about 1965, the DuPont Co. has looked into its crystal ball and published a book on their findings. The book, "The Story of Creative Capital", says that the average man can expect a 20 to 25 percent improvement in his living standard ten years

New Heating and Air Conditioning

GRILLE

With Detachable Volume Control



- Increased Directional Control
- Eliminates Possibility of Tampering or Accidental Changes
- Meters Air-flow Accurately

New features never before available . . . increased directional control, tamper-proof regulating, unmatched beauty, rugged strength and extreme ease of installation.

Extruded aluminum vanes are individually adjustable. Their unique shape provides greater directional control, and reduces air resistance to a minimum. This means more accurate balancing.

Each vane individually controlled. Operates under spring-loaded tension, eliminating any possibility of deflection pattern being altered by accident or tampering.

Fully-enclosed, wrap-around frame makes grille sturdier, assures easier, safer installation. Entire mechanism is concealed eliminating possibility of "air leaks".

Searies "400" A-J Grilles (with — or without volume control) available in any size. Choice of vertical or horizontal louvers only — or combination of both, with either louver in front. Both sets of louvers adjustable without removing grille. Available in prime coat, hammered bronze or metallic gray or any standard finish.

MATCHING RETURN AIR GRILLES AVAILABLE

NEW Detachable Volume Control

Easy to operate. Accurately meters air-flow from a "Whisper" to a "Full Blast"! A volume control you can depend on! Meters the flow accurately at every stage — from fully closed to fully open. No "dead spots". Louvers move simultaneously in opposing directions. Gear-driven action. System may be balanced without removing outer grille. Available with grille, or can be quickly installed later.

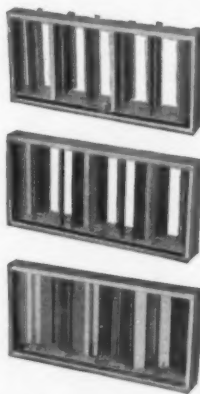
For More Information — Call or Write

A-J MANUFACTURING CO.

3601 E. 18th Street

Dept. A-2

Kansas City 27, Mo.



the editor's notebook

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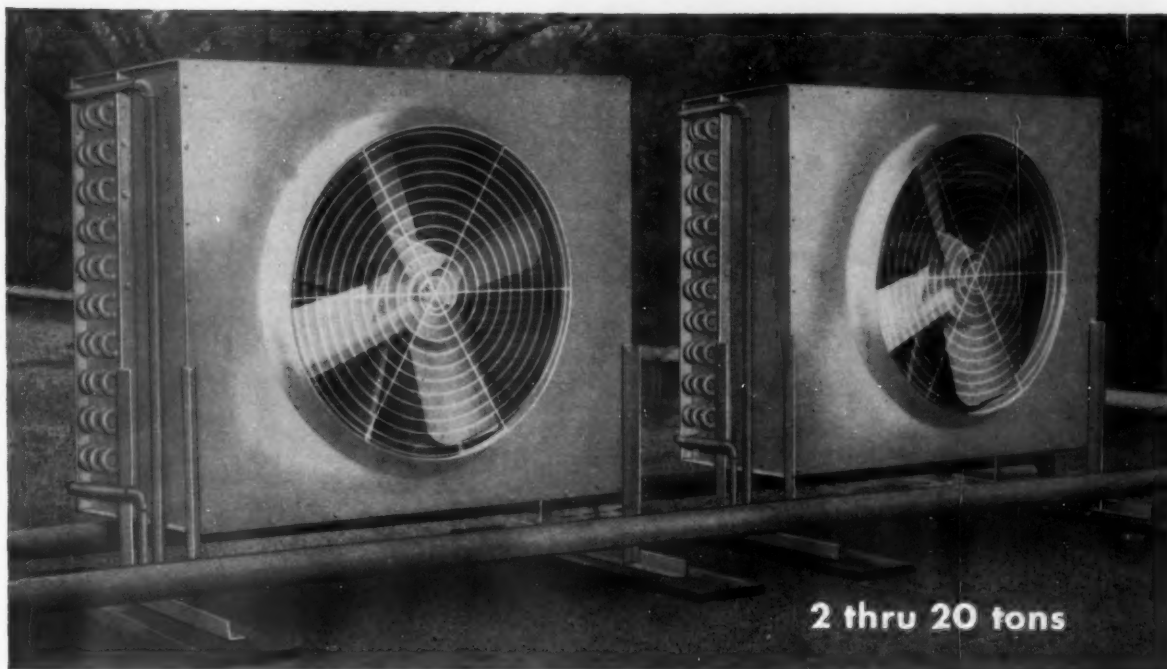
from now. This is based upon the amount of money needed to replace worn-out or outmoded facilities (\$230 billion) and capital to provide additional jobs for the ever-increasing population (\$350 billion). It is felt that the \$580 billion needed can be raised from corporate earnings, set-asides for depreciation and from private investments. So, I'm looking forward — and I hope you are, too — to this intriguing forecast coming true. Whatever our living standard, it's good to feel it improve and to know our neighbors are going upward with us.

Another Look Into the Future

IT SEEMS that everybody is trying to get into the act of looking far into the future — and this is a healthy attitude because thinking of what is likely to take place 5, 10, 15 or 20 years from now helps in formulating plans based upon known conditions and in projecting these plans upon a sounding board of other people's findings. Not to be outdone in making plans for the future, the National Association of Manufacturers has sent me a copy of its 36-page book entitled "So People May Prosper." This book takes a look into 1975 — 20 years hence. It finds that our population will be 220,000,000, which means that an additional 50,000,000 persons will become part of the market for goods and services. The book outlines a way by which 20,000,000 more people will be provided with jobs so that purchasing power can be maintained at a ratio to support the higher standard of living that nearly everyone will be taking advantage of. It is said that per

So Halstead & Mitchell Engineers said:

"LET'S GIVE THIS INDUSTRY A BETTER AIR-COOLED CONDENSER"



Now we proudly call to your attention the Halstead & Mitchell Air-Cooled Condenser for waterless air conditioning and refrigeration. This is today's *better* remote Air-Cooled Condenser.

It is engineered to a new principle called "Co-ordinated Design," and this is engineering pioneering which has coordinated capacity, performance, structural design and appearance to give:

1. Extra-Safe Capacity Ratings — made possible by a unique "dimpled" fin giving 15% added heat transfer, as well as a core designed for higher air volumes at lower fan speed.

2. Extra Years of Working Life — insured by exclusive, proven Halstead & Mitchell protection against corrosion; lifetime ball bearings; and a tubing assembly pattern which is self-reinforcing and thus deadens vibration before it starts.

3. Extra-Quiet Operation — which is the direct result of deep-pitch fan blades driven at slow speeds.

4. Extra-Easy Multi-Circuiting — developed for Halstead & Mitchell remote Air-Cooled Condensers by engineers

who know what simpler manifolding and selection of circuits can mean when several air conditioning and refrigeration machines must work off a single coil.

Even more important, you know these Air-Cooled Condensers bring you—with their Halstead & Mitchell nameplate—an assurance of the highest quality in the industry. Whether you are jobber, contractor, architect or manufacturer (and we'll be pleased to give quantity quotations), order Halstead & Mitchell "Co-ordinated Design" for the better Air-Cooled Condenser.

WRITE FOR BULLETIN AC-100

Halstead & Mitchell

BESSEMER BUILDING, PITTSBURGH 22, PA.

Manufacturer of THE INDUSTRY'S WIDEST SELECTION OF COOLING TOWERS
World's Largest Manufacturer of WATER-COOLED, CLEANABLE CONDENSERS

the editor's notebook

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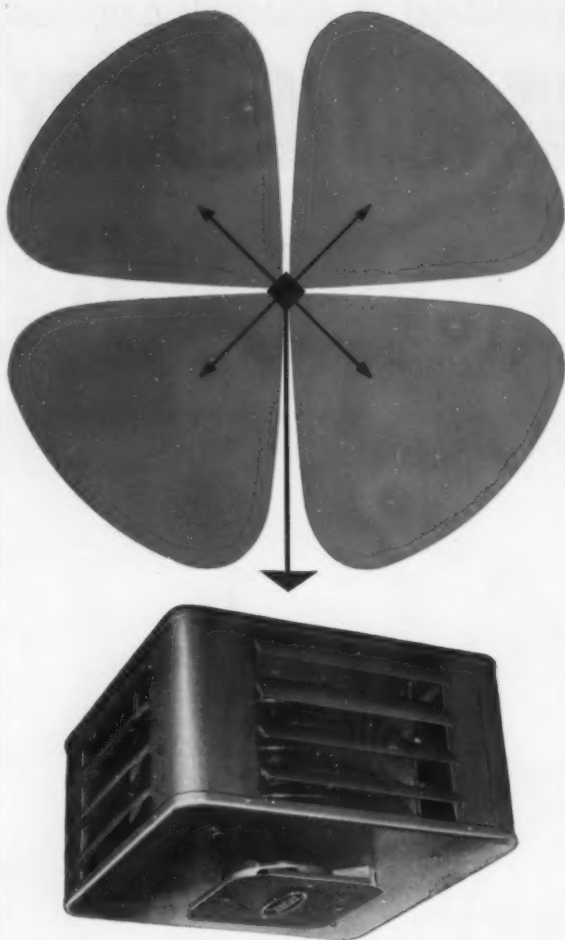
capita income will be increased by 50 percent over today's income average.

According to the association, now is the time to be putting aside that extra capital that will be needed to expand and to become part of the growing economy and prosperity that will continue to be with us through the years ahead. Are you planning to modernize your showroom, buy new machinery, enlarge your merchandising program and develop your service and installation staff to be part of this growing industry? Then now is the time to think about where the money will come from when you put these plans into operation.

Sees Four Day Week In Next 20 Years

WHAT'S the future for labor? This is a question that everyone would like to know the answer to. Of course, there is no concrete answer but, after having recently read an article in one of the weekly news magazines, I feel that its forecast for 1975 may very well come to pass. The article predicts a four day week and a seven hour day and, according to the studies of Dr. John W. Kendrick, National Bureau of Economic Research, this could very well come to pass. Dr. Kendrick says: "The remarkable stability of the trend of productivity over a period during which much cumulative change has taken place leads me to believe that radical social change would be likely to alter past trends substantially."

"The steady growth in output per man hour, made possible by improvements in methods and equipment, has reduced costs while permit-



"Clover leaf" air distribution covers 1/5 acre with heat

For heating coverage, you can't beat Carrier's exclusive "clover leaf" pattern of air distribution.

Just one of the new 4-way Carrier Unit Heaters will spread hot air over 8500 square feet of floor space. Better than 3 conventional fixed outlet projection-type unit heaters.

Simple adjustments vary the pattern. No outlet to change. No accessories to add.

Eight sizes for steam or hot water with ratings from 55,000 to 600,000 Btu/hr. Look in the Classified Telephone Directory for the name of your local jobber-distributor.

Carrier Knows Heating! Over fifty years of leadership in air conditioning have given Carrier unmatched experience in temperature control—heating and cooling! Carrier Corporation, Syracuse, New York.



air conditioning • refrigeration
industrial heating

the editor's notebook

(continued)

ting sweeping increases in real incomes, opened up vast new markets, created millions of new jobs, and provided the immense variety of goods and services that we now enjoy. While temporary dislocations of workers are inevitable in a progressive society in which industry itself is undergoing constant change, such displacements are normally absorbed in other occupations.

"Yet, periodically, whenever business sags in one of its cyclical dips, the old cry of machines putting people out of work is heard again.

"Labor leaders who profess so much concern over the effects of mechanization on jobs can hardly be unaware of the consequences of constantly rising wages and other labor costs in spurring industry to adoption of labor-saving devices. Inevitably, such pressures force industry to mechanize and reduce its dependence upon manpower.

"Nevertheless, it should be evident that the mass unemployment experienced during the '30s was basically a depression phenomenon, and not due to speeding up of technological discovery. The process of introducing new and better methods—in manufacturing, in the great and growing service industries, and in agriculture—is one that has been going on for generations. It hasn't come about suddenly, nor in all industries at the same time."

Adding all these facts together it looks like the four day week will very likely be the rule rather than the exception in 1975.

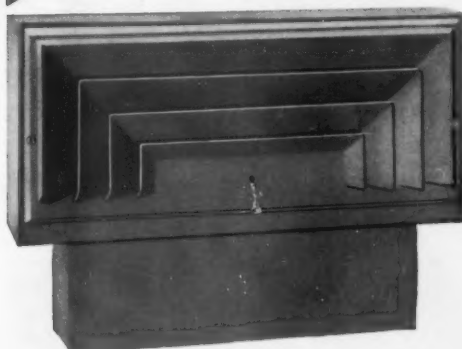
Clyde M. Barnes
EDITOR

a
register
for
every
job

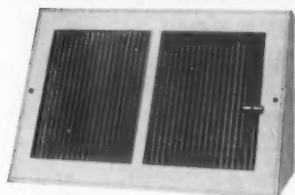
MIDCO

a
size
for
every
need

THE FULL LINE HOUSE for Heating Cooling & Industrial



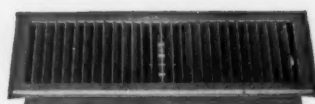
#99
BASEBOARD BALANCED-FLOW PERIMETER DIFFUSER
In the wall for new construction. Out of wall for older homes.



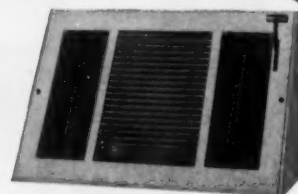
#343 VERTICAL FIN
PERIMETER BASEBOARD DIFFUSER
Sizes: 3 3/4" PROJECTION
10 x 6 14 x 6
12 x 6 14 x 8



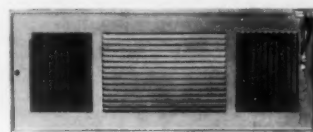
#900
BALANCED-FLOW DIFFUSER
Needs NO quadrant dampers to balance system
Stock Sizes: 2 1/4 x 12 Length: 17" - 24" - 30" - 36"



#512
PERIMETER FLOOR REGISTER
Sizes:
2 1/4 x 10 4 x 10 6 x 10
2 1/4 x 12 4 x 12 6 x 12
2 1/4 x 14 4 x 14 6 x 14

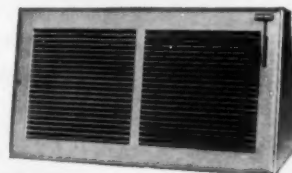


#843
PERIMETER BASEBOARD DIFFUSER
3 3/4" PROJECTION
Sizes:
10 x 6 12 x 6
14 x 6



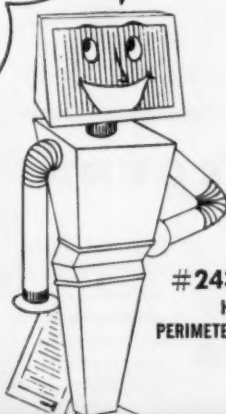
#80
PERIMETER SIDEWALL DIFFUSER

#84
PERIMETER BASEBOARD DIFFUSER
Sizes:
10 x 6 12 x 6
12 x 4 14 x 6



#243
HORIZONTAL FIN PERIMETER BASEBOARD DIFFUSER 3 3/4" PROJECTION
Sizes:
10 x 6 14 x 6
12 x 6 14 x 8

YOU ARE
LOOKING AT JUST A
SMALL PART
OF MIDCO'S
COMPLETE
LINE



SOME JOBBERS OUTLETS
STILL OPEN

MIDCO

REGISTER CORPORATION
1059 GRAND AVE. ST. PAUL, MINN.

Makers of over 6000 different register units

NEW!

**PEAK-ENGINEERED TO A NEW HIGH
IN OIL HEATING QUALITY AND PERFORMANCE! . . .**



NEW

**HIGH-BOY
MODEL OFVS**

Vertical furnace designed especially for installation in utility room, alcove or closet in basementless homes. Takes up approximately 2' x 2' of floor space.

NEW

**DOWN-FLOW
MODEL OFDS**

For perimeter heating systems. Installs in closet, alcove, utility room. Quiet, compact, efficient.

NEW

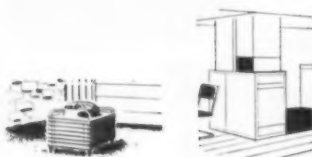
**LOW-BOY
MODEL OFLS**

Compact, quiet, clean and efficient. This sleek, handsome furnace is designed especially for basements with low ceilings.

NEW

ALL MODELS IN THREE SIZES: 85,000, 102,000 AND 135,000 BTU. AT BONNET

★ YEAR 'ROUND AIR CONDITIONING



Janitrol oil-fired winter conditioners are adaptable for summer cooling with Janitrol's great new air-cooled cooling unit that needs no water, sewers or cooling towers—may be installed any time after winter conditioner is installed, or at the same time. Cooling coil applicable to outlet duct as shown. Compressor-condenser unit goes outside the house, or in garage or carport. Also water-cooled vertical twin unit available with independent blower.



PEAK ENGINEERED

All-new design . . . built from the ground up! The result of over 2 years engineering and development by Janitrol's famous heating research laboratories.



FACTORY ASSEMBLED FOR EASY INSTALLATION

All sizes shipped from factory completely assembled.



COMPLETE WITH CONTROLS

Complete set of controls furnished with each furnace include thermostat, blower and limit control, primary control, and draft control.



CONVERTIBLE • TO GAS

Whenever desired after city gas is available, with installation of A.G.A. listed Janitrol (Model JH) conversion burner.

THE **BIG J** Janitrol

WINTER AIR CONDITIONER LINE

... with "WAY-OUT-FRONT" features, performance and economy to put you "WAY-OUT-FRONT" in sales and profits! MODELS AND SIZES TO MEET MOST WARM AIR FURNACE NEEDS!

Now—there's a *big* difference in oil-fired furnaces. It's the all-new line of Janitrol winter air conditioners. And it brings to the oil-fired field the same famed quality and advanced engineering that's kept Janitrol first and foremost in gas heating equipment. *This* is quality you can see in precision construction; quality you can hear in new quiet operation; quality you can trust for more satisfied customers, fewer service headaches and call-backs. All models are compact and good-looking, designed for easy installation and quick, easy conversion to gas. Ask your Janitrol representative for full details on the BIG J-Line. Or mail the coupon to us. No obligation, so do it today.

Janitrol leadership gives you features you can sell... quality you can trust!

- ✓ **Exclusive Janitrol "Heating Heart" of Welded Steel**—quieter, more efficient, squeezes maximum Btu from every drop of oil.
- ✓ **Jet-omizer Hi-pressure Burner**—Super powerful to thoroughly atomize fuel and create proper turbulence with combustion air for clean, complete ignition of fuel mixture.
- ✓ **Janitrol Direct-A-Flow Blower**—specially designed and positioned so that a powerful flow of air scrubs the entire heated surface evenly for maximum heat transfer.
- ✓ **Compact, Insulated Cabinet**—combines smart styling with compact design. Insulated to keep outside surfaces comfortable to the touch, insure greater quietness of operation.
- ✓ **Air Filter**—Adequate capacity for effectively removing dirt, dust, lint, pollen.
- ✓ **Janitrol Fully-automatic Control System**—provides more uniform heating, greatest economy, with maximum safety under all conditions.
- ✓ **Prefabricated Wiring Harness**—simplifies installation, keeps profits up.

Janitrol
HEATING AND AIR-CONDITIONING
DIVISION

Surface Combustion Corporation, Columbus 16, Ohio

In Canada: Moffat Heating & Air Conditioning, Division of Moffats Ltd., Toronto 15

Join up with Janitrol

—for greatest customer acceptance,
faster selling at a greater profit.

Mail coupon for details!

Janitrol Heating & Air Conditioning Division
Surface Combustion Corporation, Columbus 16, Ohio

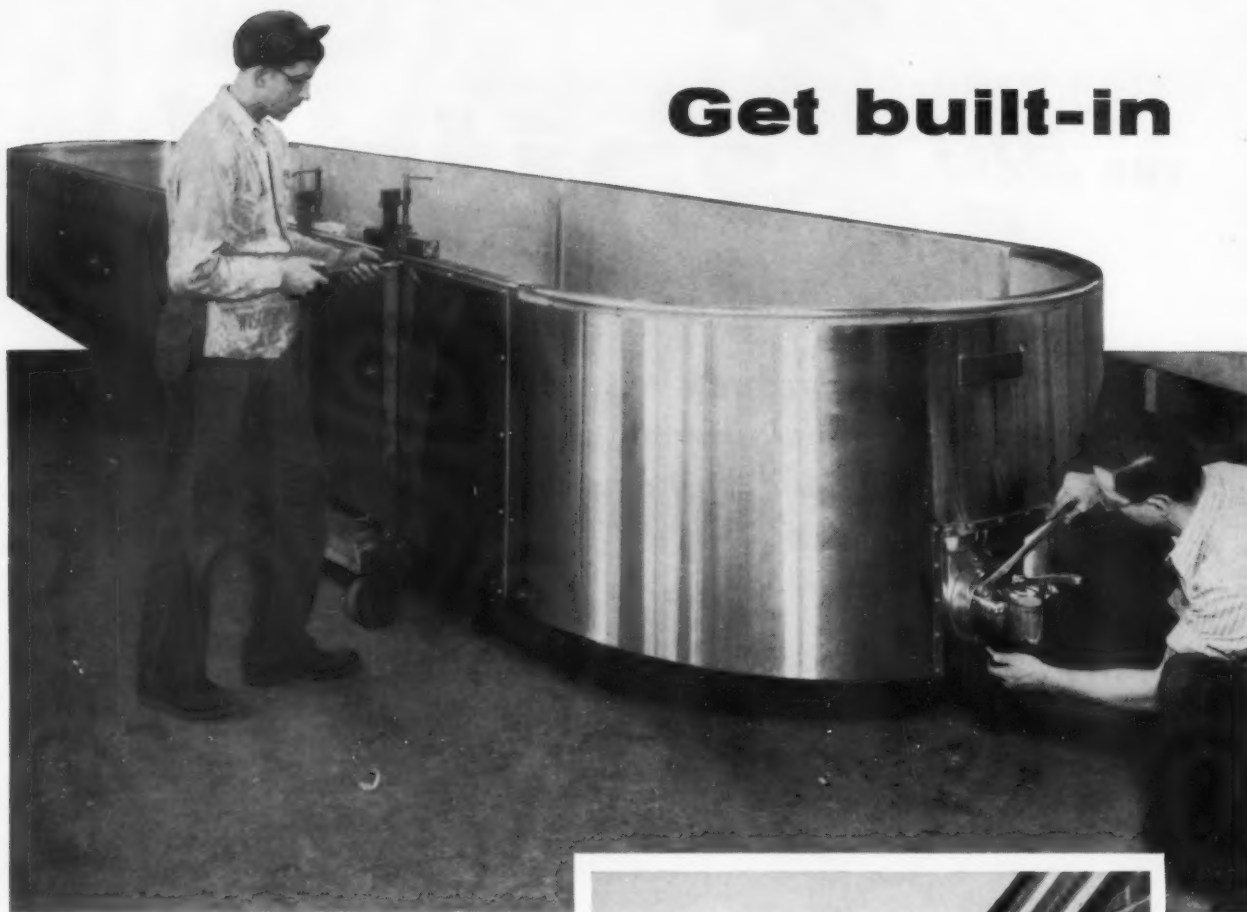
Gentlemen: Please send me complete information on the new Janitrol oil-fired winter conditioner line and profit opportunities for dealers.

NAME _____

COMPANY _____

CITY _____ STATE _____

Get built-in



FUNCTIONAL BEAUTY increases the sales appeal of this cheese processing vat. Made of lustrous ENDURO Stainless Steel, it will deliver a lifetime of trouble-free service . . . stay bright and sanitary without laborious polishing. Republic makes all analyses of stainless to meet every application.

YOU ADD TWO STRONG SALES POINTS to your roof drainage bid when you point out the extreme durability and low maintenance of a stainless steel installation. Both builder and owner stand to benefit through savings that make stainless steel actually less expensive in the long run. Republic's Berger Division makes a complete line of gutters and downspouts plus all accessories, including mitres, elbows, spikes and ferrules, ends, and drops. Send coupon for complete data.



REPUBLIC



World's Widest Range of Standard Steels

sales appeal with

REPUBLIC ENDURO[®]

STAINLESS STEEL

What do your customers demand in your fabricated products? Is it a long-lasting, attractive finish requiring minimum maintenance? Or high strength without excess weight? Are you called on to furnish a hard, dense, easily sanitized surface that will not crack, peel, flake or chip? Or do they need high resistance to rust, corrosion, heat or abrasion?

Whether you face one or a combination of these requirements, Republic ENDURO Stainless Steel provides exactly the sales appeal you need to land the order. And since you automatically deliver all of ENDURO's advantages regardless of which are needed, you build a solid reputation for top-quality products . . . the essential foundation for high-profit repeat business.

Republic ENDURO Stainless Steel has been "the sheet metal man's metal" for over a quarter of a century. Its ability to shrug off the most severe duty under adverse conditions, both indoors and out, has established it as ideal for containers, housings, siding, steeples, signs, ductwork, ornamental applications, restaurant equipment and a host of other uses. In addition, you'll find ENDURO easy to fabricate on your existing equipment.

Contact your local ENDURO distributor today and get started in high-profit, stainless steel fabricating. Backed by Republic—world's largest producer of alloy and stainless steels—he can give you the tips you need to specialize in stainless . . . the metal with built-in sales appeal. Or mail the coupon for full information.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION

Dept. C-1285
3162 East 45th Street
Cleveland 27, Ohio

Please send me further information on:

- ☐ ENDURO Stainless Steel Sheets
☐ Berger Roof Drainage Products

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

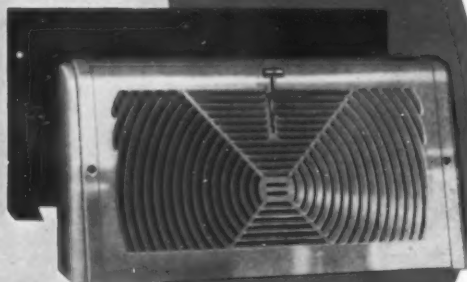


OUT-OF-WALL BASEBOARD DIFFUSER

NOW AVAILABLE IN **3** SIZES



No. 405 10" x 6"



No. 405 12" x 6"



No. 405 14" x 6"

Installers everywhere found the H&C No. 405 Diffusaire, in our original 14" x 6" offering, so advantageous and efficient that they literally demanded the two additional sizes shown at the left. And here are some of the reasons for doing so:

1. IT'S BY FAR THE MOST PRACTICAL DIFFUSER FOR PERIMETER SYSTEMS IN MANY TYPES OF OLD CONSTRUCTION.
2. NO STACKHEAD IS REQUIRED. It comes equipped with back panel. Simply connect to standard boot of suitable size.
3. ITS VERY LOW RESISTANCE PERMITS TOP-NOTCH RESULTS AT LOW VELOCITY. It provides the same air pattern as our popular No. 401 Sidewall Diffusaire, thoroughly blanketing the average wall or window area.
4. DAMPER IS EQUIPPED WITH VOLUME ADJUSTING SCREW FOR BALANCING.
5. IT CAN BE USED WITH EXCELLENT RESULTS IN ANY INSTALLATION . . . OLD OR NEW CONSTRUCTION, particularly where masonry walls are encountered.
6. PROJECTION IS ONLY 2 1/4 inches. FURNISHED IN DECORATOR GRAY or ATTRACTIVE METALUSTRE FINISHES.

For complete details see your H&C Jobber or our current catalog "A".

HART & COOLEY MANUFACTURING CO.

IN GENERAL, HART & COOLEY MANUFACTURING CO. THEY BUILD WHAT YOU WANT

300 EAST EIGHTH ST.
HOLLAND, MICH.

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

NWAHACA To Hold Home Air Conditioning Conference

Two-Day Meeting in Chicago, May 24-25

A TWO DAY TECHNICAL conference where the latest information on residential cooling systems and warm air heating systems will be presented by the National Warm Air Heating and Air Conditioning Association from data obtained in its research program will be held in Chicago, May 24-25 at the Edgewater Beach hotel. Purpose of the technical conference is to make it possible for industry engineers to secure first-hand knowledge of findings obtained from association and privately sponsored research programs. Information to be presented will show latest trends in equipment selection, its application to meet varying requirements and what performance can be ex-

pected from specifications that differ from normal.

Papers presented at the May conference will include reports on research activities at the University of Illinois, University of Minnesota and field investigations of the mobile laboratory.

The conference — which represents a new NWAHACA industry service activity — is being planned by the association's technical conference committee, composed of Frank J. Nunlist, Mueller Climatrol Div. of Worthington Corp., chairman; Keith T. Davis, Carrier Corp.; Frank L. Meyer, The Meyer Furnace Co.; C. W. Nessel, Minneapolis-Honeywell Regulator Co.; and A. B. Newton,

of The Coleman Co., Inc.

Attendance at the conference will be open to all members of the National Warm Air Heating and Air Conditioning Association, according to George Boeddener, managing director, 640 Engineers Bldg., Cleveland 14.

Reports Cooling Market 'Virtually Untapped'

ONLY ONE HOME in 22 is equipped with mechanical air conditioning at the present time, the Du Pont Co. stated in reporting initial findings of its first annual survey of the home cooling market. That figure was unexpectedly low, according to the company's Kinetic Chemicals Div., in view of the facts that the estimated market totals 45 million dwelling units and that during the last three years the industry has produced some 4,000,000 room air conditioners.

Only 4.3 percent of the 13,441 home owners interviewed said they owned a room air conditioner. Another two-tenths of one percent said their homes were mechanically cooled by central air conditioning systems, while an additional 6.2 percent indicated they were beating the heat and humidity with fans, evaporative coolers, etc. That leaves 89.3 percent of the nation's homes without some form of cooling at the present time and represents a virtually untapped market, according to Robert J. Thompson, director of sales.

About half the owners of cooling equipment said they had purchased it during the hottest part of the summer, while 28 percent attributed their purchases to health reasons.

(More news on page 22)

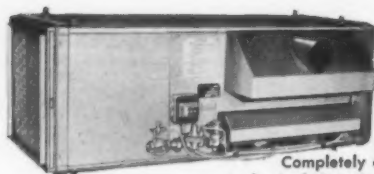
SMCNA Works on Plans For Washington Convention

SHEET METAL contractors should circle the dates May 9, 10, 11, 12 and make transportation and hotel arrangements to attend the annual convention of the Sheet Metal Contractors' National Association in Washington, D. C. All meetings will be held at the Hotel Shoreham. The program has been approved by the board of directors and is in the process of being completed as we go to press. Subjects of extreme interest to all sheet metal contractors (non-members as well as association members) will receive attention during the four day meeting. Executive Secretary Joseph D. Wilder urges all members to make plans to attend the convention and has issued a

blanket invitation to all non-members to come to Washington and see what is being done to lighten the work load for sheet metal contractors.

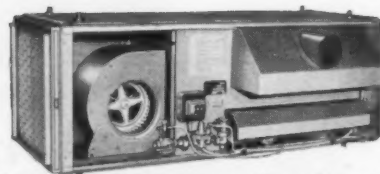
The program will include forums on fabricating, contractor problems, business management, welfare programs, estimating, cost accounting, warm air heating, liaison work with other industries, labor relations and legal responsibilities. Also, nationally known speakers and representatives have accepted invitations to address the convention.

A special ladies' program has been arranged that will provide time for shopping, a visit to the White House, a bus trip to Annapolis, a style show and a tour of the Senate building.



Completely assembled
and wired Gas Horizontal Furnace.

THE GAS FIRED HORIZONTAL FURNACE



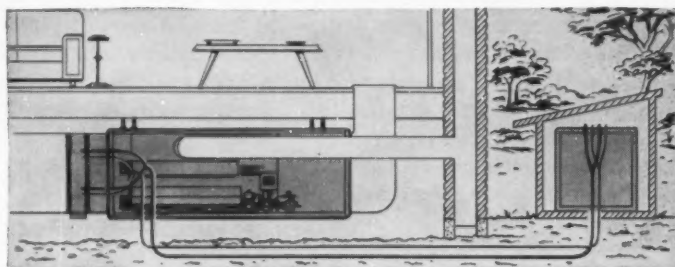
Gas Horizontal Furnace, showing Blower Compartment, Burner Manifold and Draft Hood Opening.

INGENIOUS DESIGN AND CONSTRUCTION MAKE BIGGER USE OF SMALLEST SPACES

Luxaire HORIZONTAL FURNACES for Space-Saving . . . Flexible . . . Money-Making Installations

**Exceptionally
LOW and COMPACT
With Unexcelled Flexibility
In Installation**

At right, Gas Fired Horizontal Furnace installed in "crawl" space for Year 'Round Air Conditioning. Cooling Coil is placed in Discharge Duct leading from furnace. Air Cooled Condensing Unit is outdoors.



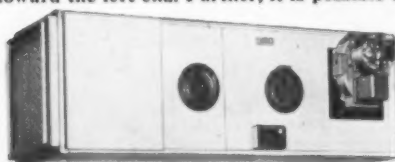
The new 100,000 B.T.U. input Luxaire Gas Horizontal Furnace is but 21" high, 21" wide and 58" long; the largest unit, with 140,000 B.T.U. input, is only 24" high, 27" wide and 60" long.

The Luxaire Gas Horizontal Furnace is normally shipped with the gas manifold and the flue outlet located on the front and toward the right end. The gas manifold can also be installed on the back of the furnace and, when the unit is turned around, end for end, the manifold will be located toward the left end. Further, it is possible to install the gas

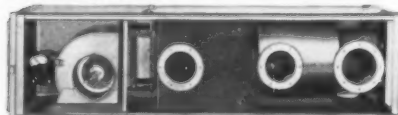
manifold on one side of the unit and the flue outlet on the opposite side.

The draft hood is equipped with an adjustable flue collar that permits the flue pipe to be taken off either horizontally or vertically and to be extended at any angle.

Thus, it is possible to locate the air intake and discharge outlets most conveniently for ductwork, to install the gas manifold most conveniently to supply lines, and to take the flue pipe off the side nearest the chimney — for unsurpassed ease of installation and accessibility!



Oil Burner installed on Assembled Oil Fired Horizontal Furnace.



Interior View of Oil Horizontal Furnace, showing Blower, Radiator, Radiation Shield and Combustion Chamber.

THE OIL FIRED HORIZONTAL FURNACE With Space-Saving . . . Money-Saving Installation and Operating Features

Luxaire Oil Fired Horizontal Furnaces offer you many of the same, excellent advantages as the gas horizontal furnaces. Four sizes . . . 84,000, 101,000, 123,000 and 224,000 B.T.U. at bonnet . . . combine unusual compactness with exceptional performance.

For convenient installation, the three smaller models are shipped with heat exchanger, blower and motor completely assembled in the casing. Four pipe sockets are provided at both the top and bottom of the casing for easy mounting or suspension. The Luxaire Oil Burner also is easily installed on four spacer studs.

Counterflow air delivery over large primary and secondary heating surfaces, in combination with the unexcelled Luxaire oil burner, which wrings every possible B.T.U. out of every drop of oil consumed, assures unmatched efficiency of operation.

Yet, the price of Luxaire Oil Fired Horizontal Furnaces is attractively low!

THE *Luxaire* C. A. OLSEN MANUFACTURING COMPANY • ELYRIA, OHIO
HEATING & AIR CONDITIONING UNITS



ELECTRICAL RATINGS
 8 Amp. at 115 V, AC
 4 Amp. at 230 V, AC
 .06 Amp. at 230 V, DC
 Motor Ratings: 1/4 HP, 115/230 V, AC

● These Baso switches recycle automatically when a normal pilot flame is established. Service calls are fewer because when low pressure or other causes affect the pilot flame below a safe lighting condition, the switch breaks the circuit to the automatic gas valve and will automatically reclose the circuit, only when a normal pilot flame is restored. If the pilot burner goes out completely, the switch breaks the main valve circuit until the pilot burner is relighted.

Think of the headaches this will save you and your customers. Automatic recycling—fewer service calls. This with the Baso Automatic recycling switches, No. 860 for two-wire circuits and No. 861 for three-wire circuits.



MILWAUKEE GAS SPECIALTY CO. • Dept. AA-8, Milwaukee 1, Wisconsin

WHAT'S HAPPENING

(Continued from page 19)

Federal Trade Commission Studies Rules for Air Conditioning Industry

THE FEDERAL Trade Commission held two meetings in January to hear final industry comments before writing trade practice rules pertaining to air conditioning and to refrigeration. It was the original plan of the FTC to write one set of rules to cover both industries; however, John P. Demling, representing the Sheet Metal Contractors' National Association, pointed out reasons why these two separate industries should not be included under one set of rules. Mr. Demling, referring to the tentative rules, stated that the rules "seek to combine two distinct industries, i.e., the refrigeration contracting industry and the air conditioning industry."

Amendment of the proposed trade practice rules was requested by Mr. Demling on behalf of the warm air heating and sheet metal industry. He suggested that separate sets of rules be set up for the air conditioning industry and the refrigeration industry. He pointed out that con-

fusion would result in many quarters if the FTC failed to consider all of the factors involved.

The FTC will study the testimony presented, both orally and written, before proceeding with final action on the proposals.

In defining the air conditioning industry, Mr. Demling pointed out that the air conditioning industry is a 'parent industry' to many sub-industries and that many members of each sub-industry have considered themselves members of the 'air conditioning industry' (with the result that the public has found it difficult to recognize a competent contractor). Actually an "air conditioning installation" requires, as a package, technical knowledge in air movement control, air temperature control, humidity control, metal fabrication, sound control and other specialized knowledge. Until a person can qualify as a professional in these fields, he cannot justly claim to be an air conditioning contractor, he said.

Says More Titanium To Be Used in '56

FINAL industry figures for shipments of titanium mill products are expected to show an expansion from about 1200 tons delivered in 1954 to between 1800 and 2000 tons in 1955, according to C. I. Bradford, president and general manager of Rem-Cru Titanium, Inc. An expansion of at least comparable proportions is forecast for 1956, he said.

In 1955, encouraging pilot plant applications in the chemical process, pulp and paper, electronics and other industrial fields have greatly increased the confidence in early widespread non-defense use of titanium and a healthy distribution between civilian and military use for the future of the industry, he said.

Discuss Apprenticeship Conference Plans

MANAGEMENT and labor leaders met recently to discuss plans for the forthcoming 12th Annual Eastern Seaboard and the Eighth Annual Southern States Apprenticeship conferences. The eastern seaboard conference, which last year attracted more than 100 visitors from eight eastern states, will be held in New Ocean House, Swampscott, Mass., April 22 to 25. This conference includes the states of Maine, Vermont, New Hampshire, Rhode Island, Connecticut, New Jersey, New York and Massachusetts.

Industrial representatives from Florida, Georgia, Mississippi, South Carolina, Tennessee, Alabama, Arkansas, Louisiana, Oklahoma and Texas will participate in the south-

OHI Surveys Members On Business Prospects

THE OIL-HEAT Institute of America recently sent questionnaires to its manufacturing and accessory division members to learn their opinions regarding business prospects for the last half of 1956. Following are some of the results of the survey as reported by OHI:

"Sales — about 71.5 percent of the respondents expect sales to be up, with the figures averaging out to about 16 percent up.

"Factory Inventory — About two-thirds of the companies are maintaining about the same inventory as last year while about one-third are increasing.

"Field Inventory — 48.5 percent say 'about the same' as last year, 20 percent say 'up,' 14.5 percent say 'down,' and 17 percent gave no answer.

"Direct Labor — the members are pretty well agreed that costs are either up now or will be in the fourth quarter from 5 to 6 percent.

"Indirect Labor — about half of those reporting believe rates will be about the same, 37 percent say up about 5 percent, and almost 12 percent are uncertain.

"Material Costs — there seems to be general agreement that these will be up about 6 percent.

"Product Prices — over half the members (57 percent) believe their product prices will remain the same and 6 percent say 'down,' while 31 percent are raising prices from 3 to 6 percent.

"Profit — 37.5 percent say 'about the same'; 20 percent say 'up'; 34 percent say 'down'; and 8.5 percent didn't answer."

ern states conference, which will be held at Buena Vista hotel, Biloxi, Miss., July 5 to 7.

High on Efficiency...Low on Cost

RICHMOND BUDGETEERS

**WINTER AIR CONDITIONERS
GAS-AND OIL-FIRED MODELS**

The "Four Budgeteers" offer the utmost in heating efficiency to meet today's demand for economical installations. Green enamel finishes are "Duridized" for maximum protection against rust and corrosion. All are insulated with heavy corrugated asbestos backed with aluminum foil. All feature effective spun glass filters, convenient service access.

**WRITE FOR FREE
TECHNICAL BULLETINS!**

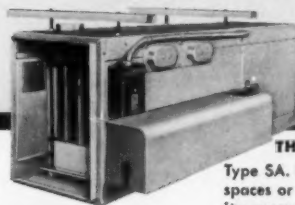
THE COUNTERFLOW

Type CG-46. For slab type homes or any perimeter system. Available with 70,000, 90,000 or 110,000 BTU/Hr. inputs. A.G.A. approved. Type CO-81; 84,000 to 112,000 BTU/Hr. output at bonnet.



THE HIGH BOY

Type VG-36. A.G.A. approved for small spaces such as closets or utility rooms. Available with 70,000, 90,000 or 110,000 BTU/Hr. inputs. Type VO-71; 84,000 or 112,000 BTU/Hr. output at bonnet.



THE LOW BOY

Type LG-16. For full or half basements or split levels, closets or utility rooms. 70,000, 90,000 or 110,000 BTU/Hr. inputs. A.G.A. approved. Type LO-61; 84,000 or 112,000 BTU/Hr. output at bonnet.

THE HORIZONTAL

Type SA. For attics or crawl spaces or suspension in utility rooms and basements. Available with 60,000, 80,000, 100,000, 120,000 or 140,000 BTU/Hr. inputs. A.G.A. approved.



RICHMOND

RADIATOR COMPANY

16 Pearl Street, Metuchen, N. J.

Look to RICHMOND for a complete line—automatic heating—central summer cooling units.

It's here! The only

It guarantees *floor-to-*



the new

Universal



**CONSTANT
COMFORT
GAS HEATER**

for LP or city gas

Products of Cribben & Sexton Company, Chicago 12, Illinois



Universal
Gas Ranges



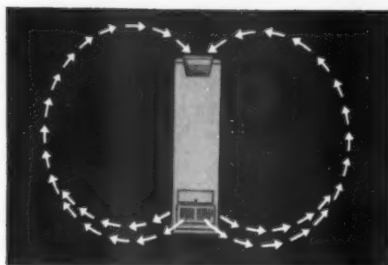
Universal Automatic
Gas Clothes Dryers



Universal Consum-all
Gas Incinerators

home heater so new, so revolutionary...

constant ***-ceiling comfort!***



New "central heating" principle ends cold floors and hot ceilings ... constantly circulates warm, filtered air all over the rooms!

No wonder the Universal Constant Comfort Gas Heater is being hailed as the first really new home heater in 20 years!

It looks new! Smartly and compactly designed to complement the finest furnishings and save floor space.

It feels new! No more on-again, off-again heat blasts that leave floors uncomfortably chilly and ceilings burning hot.

It is new! A revolutionary new principle of constant heat circulation brings the floor-to-ceiling comfort of the most modern central heating systems to "space heater" homes.

Yet Universal Constant Comfort costs less than some ordinary heaters and requires no extra installation.

How does it work?

Universal Constant Comfort is completely automatic. Simply start it at the beginning of the heating season and forget it. The temperature selected on the thermostat control is maintained throughout the rooms at all times by constant circulation of warm, filtered air. Even hard-to-heat floors stay safely and comfortably heated so there's never a worry about children playing upon them. Because Universal's completely new principle brings down and re-circulates pre-heated ceiling air, fuel costs are lower too.

Opens a big new profit opportunity!

If there's a market for "space heaters" in your area, there's a many times bigger one for the new Universal Constant Comfort Gas Heater. Customers who have never bothered to replace their old equipment

because there was nothing really new available will literally want to kick their old "space heaters" right out the door. In addition, there's a fast growing, new demand for heaters in motels, house trailers, shopping centers and many other locations. Universal Constant Comfort fits all these needs as no other can.

Get all the details now!

A big national advertising program is scheduled to break early in the Fall selling season. You'll want to be ready. So rush the coupon today for complete details of the Universal franchise plan that will make your store headquarters for the hottest home appliance since TV!

**Never before a
GUARANTEE
like this!**

Cribben and Sexton Company guarantees the Universal Constant Comfort Gas Heater (when used in proper size for space to be heated) will out-perform any heater now sold in maintaining constantly comfortable temperatures from floor to ceiling.

Here are new features that make all other home heaters out of date!



New beauty! Designed to complement the home and furnishings.



New safety! Fiberglass insulated cabinet always stays cool, safe to touch.



New convenience! Simple, eye-level controls are out of children's reach.



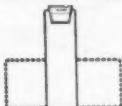
New freshness! Heats and delivers only freshly filtered air.



New economy! Cuts fuel bills by using only preheated ceiling air.



New comfort! Not just one, but three adjustable vents put heat where wanted.



New space-saving! Fits in far less space than conventional "space heaters."



New utility! Operates as an air circulator in summertime.

Rush coupon for details of this exciting new profit opportunity!

Cribben & Sexton Company
700 North Sacramento Blvd. • Chicago 12, Ill.

Gentlemen:
Please rush complete information about the special money-saving advantages of placing my Universal Constant Comfort Gas Heater order now.

your name _____
firm name _____
street address _____
city _____ zone _____ state _____



Greatest advance in

Worthington's exclusive new FLEXI-COOL

easy-to-handle sections...

That's the story in a nutshell! The FLEXI-COOL line—unique in design and completely flexible, goes together like building blocks—covers installations that ordinarily would require many different types of equipment.

Worthington's new FLEXI-COOL—in 2, 3, 5, 7½ hp sizes—permits you to stock a minimum of equipment yet solve any home, office or store air conditioning installation. Not only does FLEXI-COOL reduce the size of your inventory (and simplify your stocking problems) but it also automatically cuts your inventory costs.

The new FLEXI-COOL line consists of three basic sections—cooling cycle, filter and blower—plus accessory packages. A combination of these three basic sections (or a remote duct coil, and water or air-cooled condensing unit when needed) permits you to solve any type of installation. Sections fit together as a single compact unit . . . or can be installed separately in any location. With a choice of vertical or horizontal positioning, you can easily obtain the air intake and delivery best suited to the installation. That's how flexible the FLEXI-COOL line is.

Once installed, you can count on FLEXI-COOL's reliable Worthington compressor to provide the kind of service-free operation that makes your job easy and assures complete customer satisfaction.

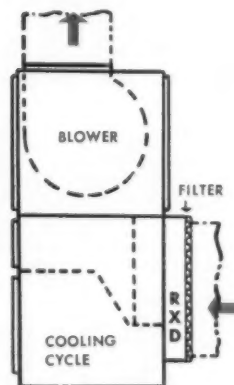
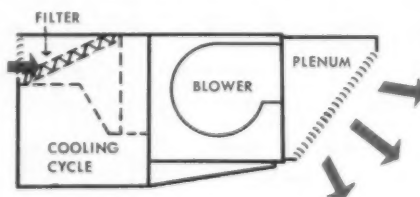
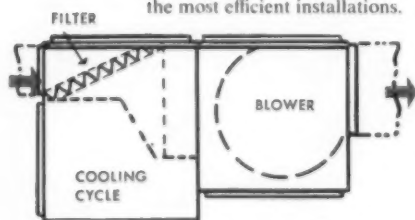
Get all the facts on the new FLEXI-COOL line and on Worthington's complete line of residential, commercial and central station equipment. Write Worthington Corporation, Air Conditioning & Refrigeration Division, Sec. A.5.55—A, Harrison, N. J. A.5.55



Worthington's new FLEXI-COOL air conditioning line is sectional, completely flexible. Cooling cycle, filter and blower sections fit together like building blocks for either vertical or horizontal positioning. (Sections may also be installed separately in any location.) New unit adapts to water and air-cooled applications—all types of space limitations. In 2, 3, 5 hp sizes, FLEXI-COOL is less than 2 feet wide, only 2 feet high and 38 inches long. Overall dimensions slightly larger for 7½ hp unit.

FLEXI-COOL FITS TOGETHER LIKE BUILDING BLOCKS

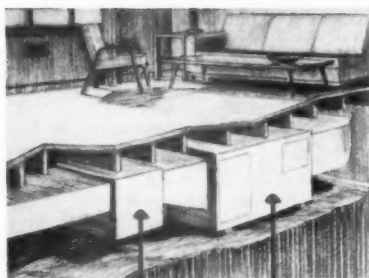
Choice of vertical or horizontal positioning permits unlimited combinations of FLEXI-COOL sections. Shown are three typical arrangements for obtaining the most efficient installations.



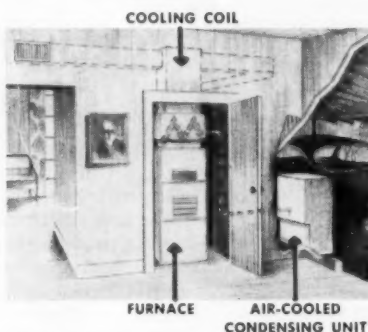
air conditioning design!

air conditioning line comes in
solves any commercial or residential job!

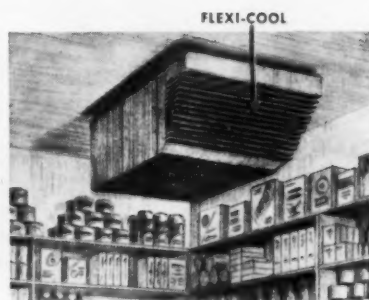
FLEXI-COOL FITS ANY SPACE



Crawl space: Here, FLEXI-COOL hangs in horizontal position from floor joists, is easily connected into existing warm-air heating system.

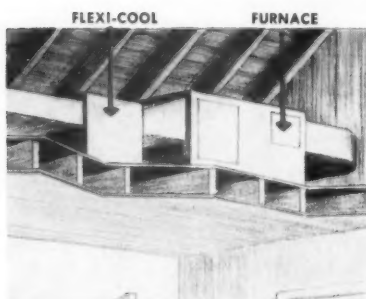


Outside the house: In this remote-type FLEXI-COOL installation, cooling coil in ductwork over furnace is connected to an outside air or water-cooled condensing unit.

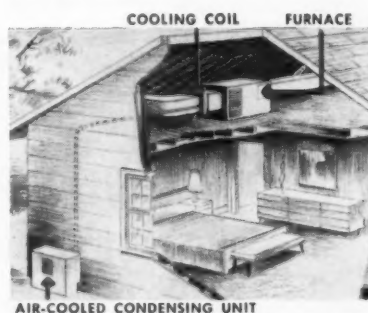


On a ceiling: FLEXI-COOL relieves valuable floor space for other duties by hanging from ceiling. Here, a desk or display counter can be added (or retained).

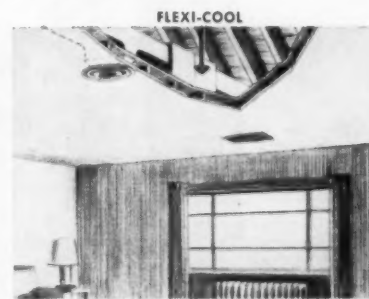
FLEXI-COOL MEETS ANY SITUATION



Dry heat: FLEXI-COOL cooling cycle can be connected to existing warm-air furnace, blower and filters.



Water-short area: Cooling coil installed in ductwork can be connected to waterless, electric air-cooled condensing unit.



Wet heat: With complete FLEXI-COOL unit installed in attic, inexpensive ducts along ceiling distribute cool air.

WORTHINGTON



CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME

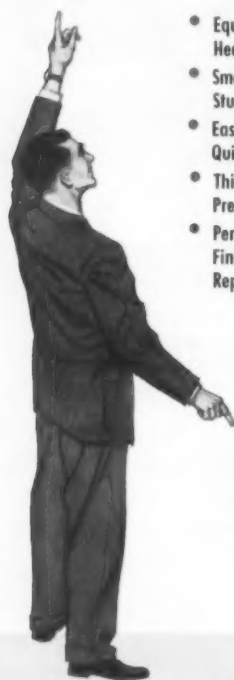


WHAT'S NEW OVERHEAD FOR DRAFTLESS COMFORT?

NEW *Lima* Series 65

ROUND STEP-DOWN CEILING DIFFUSERS

A New High In Quality
At A Low Unit Cost



- Equally Efficient for Heating and Cooling
- Smartly Styled and Sturdily Built
- Easily Installed and Quickly Balanced
- Thick, Spongy Gasket Prevents Air Leakage
- Permanent Light Beige Finish Saves Repainting Cost

There's plenty of reasons why you'll be way ahead to install this new Lima Round Ceiling Diffuser on your next overhead heating or cooling job.

The Lima Series 65 has smart good looks and built-in features you and your customers can see. It is made in the modern Lima factory under exacting quality standards. But more important is the Lima-engineered design which assures proper air diffusion for draftless comfort throughout the entire working area.

Lima's step-down rings have curved contour without straight edge for maximum free area and efficient air distribution at correct angles to induce recirculation of room air and eliminate ceiling streaks.

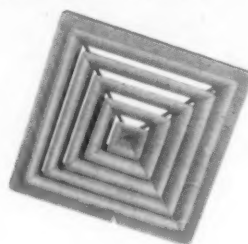
Proper installation is easy and quick with the Lima installation ring or built-in mechanical damper. Exclusive balancing control feature permits fast balancing of system. The permanent light beige finish saves repainting cost.

Immediate delivery in 7 popular sizes
Ask your jobber or write direct for Bulletin No. RD-156

*Still The Finest for
Beauty and Performance*

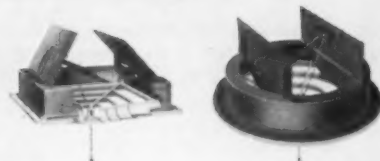
Lima Series 60

SQUARE STEP-DOWN CEILING DIFFUSERS



The modern square design matches the symmetry of acoustical tile or square block ceilings for the ultimate in beauty. Tiers of step-down vanes provide maximum free area and assure the most efficient air distribution for heating and cooling without causing drafts.

Available in 6 sizes with Lima's beautiful permanent light beige finish.



Built-in spring-loaded butterfly dampers provide simple fingertip volume control and positive air shut-off. Lima "Balancing Bell" control feature for easier balancing.

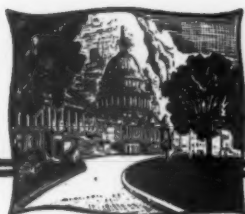
Lima

Register Co.

Lima, Ohio

Sold exclusively through heating wholesalers and manufacturers.





Washington Letter

1956 — 'Rewarding Year for Those Who Try'

By Arnold Kruckman

- **Launching of Operation Home Improvement should supply a \$3 billion stimulus for industries associated with residential modernization**
- **A government survey of major industries presents a healthy economy picture for '56**
- **A leveling-off period to digest previous gains and correct maladjustments is likely and desirable**

Approximately 1000 persons, representing the building materials and equipment industries, gathered from all parts of the United States at a lunch in the Mayflower hotel in Washington on January 16 to participate in the launching of what U. S. Housing and Home Finance Administrator Albert M. Cole officially designated Home Improvement Year.

Mr. Cole transmitted a message by President Eisenhower: "I hope that the Housing and Home Finance Agency will join with communities, the building and lending industries and private citizens in the nationwide effort to raise the level of living for all the American people."

In compliance with the President's directive Mr. Cole read the following 'Declaration of 1956 as National Home Improvement Year':

"The President of the United States has stated that the present adminis-

tration from the outset recognized three major goals of equal importance in the complex task of housing the American people.

"One goal was to provide, by private enterprise and initiative, 'a modern home for every American family' that seeks and can afford to buy such a home. This is approaching achievement.

"Another goal was to provide more and better housing, by both private enterprise and government aid, for American families with low income. This is being accomplished.

"A third goal was nationwide renewal and restoration of middle aged dwellings in basically sound condition.

"Aware of the magnitude and urgency of this need to rehabilitate our older homes, the President has expressed his desire that the Housing and Home Finance Agency stimulate

our communities, the building and lending industries, private citizens everywhere to a full and systematic achievement of 'a modern home for every American.'

Everyone Benefits

"If this objective is obtained with the energy at our command, and with the crusading spirit of our people, our entire population — owners, tenants and laboring force alike — will be enormously benefited.

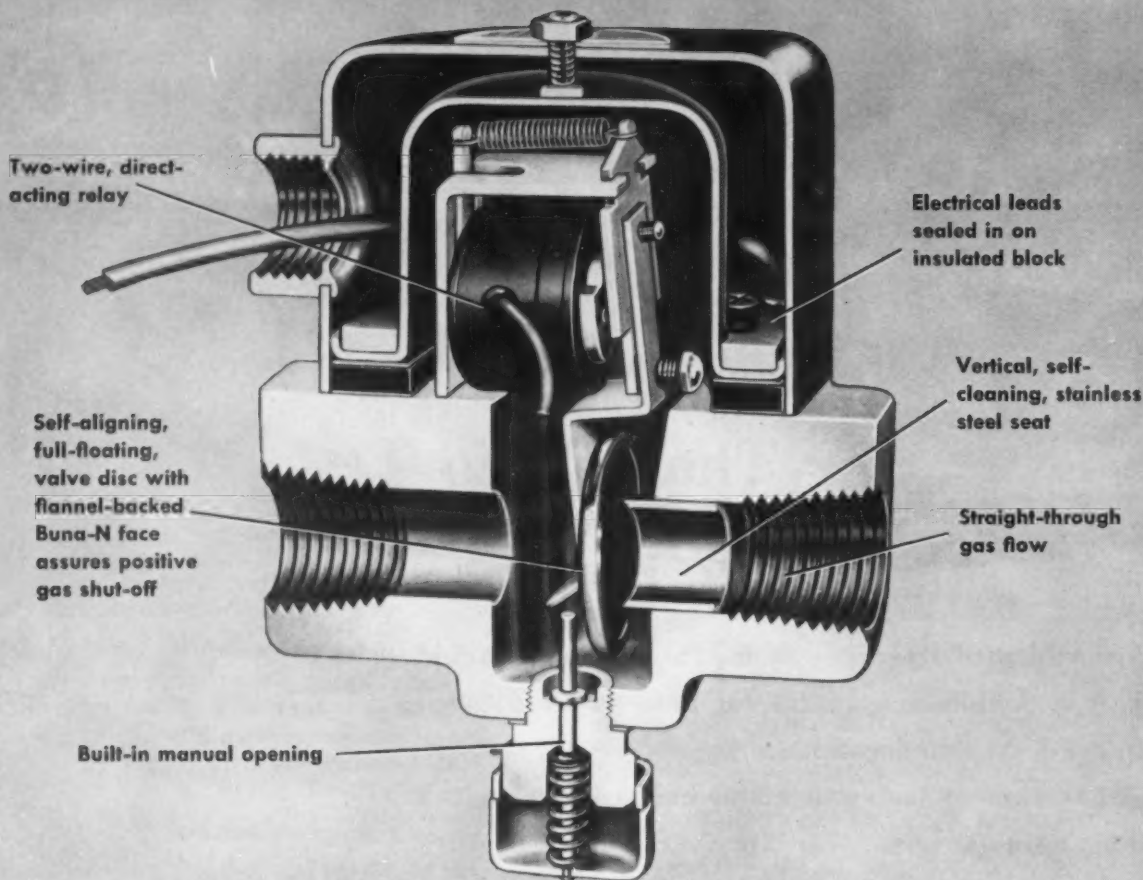
"Therefore, as administrator of the Housing and Home Finance Agency, I urge the American people to join with the President and the great forces of private enterprise in concerted effort to attain nationwide improvement of our country's homes and neighborhoods.

"In pursuance of our common objectives, I designate 1956 Home Improvement Year."

Mr. Cole stated that abundant government funds would be available to finance home building programs.

The modernization crusade was launched with the participation of some of the most distinguished American political figures, including Sherman Adams, Assistant to the President; Senator Prescott Bush of Connecticut; Assistant Secretary of the Treasury W. Randolph Burgess;

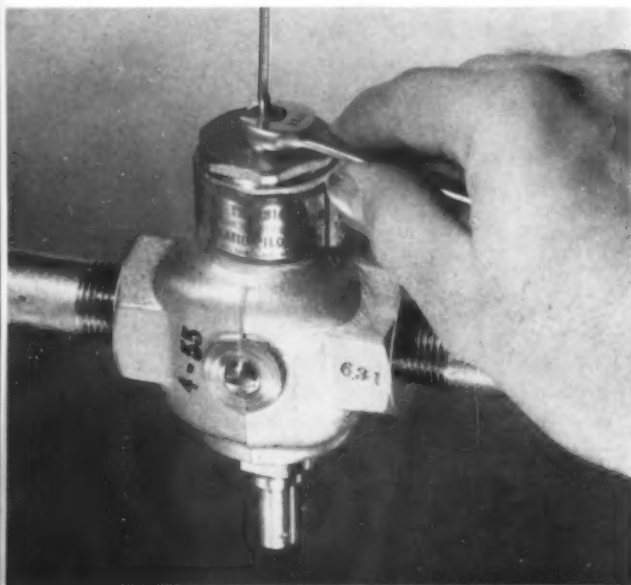
(Continued on page 32)



A glance at the above cross-sectional view of the Penn Series 926 gas valve reveals how simple yet efficient this new valve design really is! Note the absence of a plunger and kick-off spring which cause noise in ordinary valves.

LOOK HOW EASY IT IS TO CONNECT

It's so simple to connect the Penn thermocouple lead to the valve or relay. Secured with a small wrench, the male hex nut makes contact with terminals automatically. There are no covers to remove or wires to connect to terminals. Penn Series 814P automatic pilot valve is shown at left and the Penn type 850P1 automatic relay with manual reset is at right.



PENN GAS VALVE IS

"Whisper Quiet"

It's not a solenoid, not a diaphragm, but a new design idea that eliminates slam-bang operation

Here's a compact, dependable gas valve that *operates so quietly* you can hardly hear it. There's no more noise because noise is eliminated, not merely isolated. So...there's no more annoying slam-bang operation!

Look at the cross-sectional view and you'll see why the Penn Series 926 gas valve is so quiet, efficient and dependable. There's no plunger to "slap" when valve closes... no hum or residual magnetism sticking because there's no magnetic contact between armature and pole... there's no kick-off spring to vibrate or break. You get all this plus ample opening force and top capacity at the price of a magnetic valve, not a diaphragm.

If you want a gas valve that is *really* quiet, efficient and dependable... and, who doesn't... then try the Penn Series 926 on your next heating job. It's available in $\frac{3}{8}$ ", $\frac{1}{2}$ ", and $\frac{3}{4}$ " sizes for low



or high voltage applications. Ask your burner manufacturer or wholesaler for Penn heating controls... they'll operate more efficiently.

PENN CONTROLS, INC.

Goshen, Indiana

Automatic Controls For Heating, Refrigeration, Air Conditioning,
Gas Appliances, Pumps, Air Compressors, Engines

THERMOCOUPLE TO VALVE RELAY AND BURNER

Installing the thermocouple tip into pilot burner is so easy. Tightening one hex-head male nut properly positions and secures the thermocouple in one operation. Penn Type D-11 pilot burner is shown.



Penn Series 926 gas valves are normally closed and will shut off the gas supply if power fails. To open the valve manually, simply push up and turn the manual opening knob at bottom of valve.



WASHINGTON LETTER—

(Continued from page 29)

Director James W. Follin of the Division of Slum Clearance and Urban Redevelopment, H&HFA; President Clem D. Johnson of the U. S. Chamber of Commerce, Commissioner Norman P. Mason of the Federal Housing Administration; Gabriel Hauge, Administrative Assistant to the President; I. Jack Martin, Administrative Assistant to the President; Maxwell M. Raab, Secretary to the Cabinet, The Very Reverend Francis B. Sayre, grandson of President Wilson; Postmaster General Arthur E. Summerfield; Undersecretary of Commerce Walter Williams and many others.

\$15 Billion for Repairs

Mr. Cole outlined how the Home Improvement Year came into existence. He told of his travels and meetings in many cities in the United States, and about the advisory committee on government housing policies and programs which was appointed by President Eisenhower in 1953 and which is responsible for the Housing Act of 1954. Mr. Cole expressed the belief that close to \$15 billion — \$3 billion more than in 1955 — would be expended on home repairs and modernization in 1956. He estimated that Executive Director John R. Doscher of Operation Home Improvement had been modest in calculating that \$600 million worth of national and local advertising would be tied in with the Home Improvement campaign by the country's manufacturers, builders, contractors, dealers, retailers and lenders. He said that a number of cities, including Seattle, Oakland, New Orleans, Chicago, Topeka, Buffalo, Denver and St. Louis, had already appointed local Operation Home Improvement committees and that the movement is spreading. All the national organizations are helping to meet Operation Home Improvement's \$150,000 budget and these national organizations will help further through their representatives. Many manufacturers are

preparing their own dealer promotional material. The American Bankers Association has produced a series of direct mail ads for bankers.

Send for Display Kit

Operation Home Improvement itself is making available an advertising and display kit to make it easy for everyone to tie in at the local level. The kit includes a counter card, window streamer, a display or truck poster, sample radio and TV scripts, reproduction proofs for use on letterheads and billheads, mats in three sizes, and other material. The kit is available at \$5, which includes a subscription to the Operation Home Improvement news letter to be issued every other week. Requests should be addressed to Operation Home Improvement, 10 Rockefeller Plaza, New York 20.

Industry Survey Revealing

The twenty-five industry divisions of the Business and Defense Services Administration have made public a year end survey of major industries which reported the record breaking steel production is carrying into 1956 and will be the highest in history. It is predicted most steel products will be in short supply through the first six months; the tightest products will be plates, sheets, strip, structural and bar and tubular products.

Nickel will remain in short supply and limit nickel-bearing alloys, including stainless steel. Aluminum, at an annual rate of 4.6 billion lb, establishes a new record high. Copper supplies will continue to be short. Producers of refined copper are obligated to deliver to government account by the end of June for fiscal 1956.

The survey gives new construction an expenditure of \$44 billion, 5 percent above the \$42 billion all time record reached in 1955. Residential building, 1.2 million, is 100,000 units

off the record in 1955, and 200,000 less than in 1950. Stores and other service establishments in new suburban developments and along expanding highway networks are calculated at a value of \$2¼ billion, 17 percent above the 1955 total. A record \$850 million is to be spent for church and allied buildings in 1956.

Wendell B. Barnes, administrator of the Small Business Administration, basing his forecast on a poll of over 600 leading small businessmen throughout the country, reported 36.5 percent predicted business will improve in 1956; 38 percent think business will remain level with 1955; 25 percent expect it to be lower in 1956. In 1955 business failures were 42 out of every 10,000 firms as compared with an average annual rate of 71 out of every 10,000 over the past 50 years. There should be even less business failures in 1956.

See \$400 Billion Economy

Federal Reserve and Securities and Exchange Commission officials state that as we enter 1956 we stand at the threshold of a \$400 billion economy. There are no signs of an early or sharp downturn in the aggregate, and many signs that expansion is continuing. On the other hand the 1955 rate of growth, which already has the economy bumping against the limits of materials, labor supply and industrial capacity, cannot long be maintained. It is, they think, a likely and desirable prospect that a check arise and bring a period of relative stability. The need is for a leveling-off period to digest gains, check the borrowing of demand on the future and correct maladjustments which have arisen during the rapid advance.

The chief source of strength in 1956 will be the scheduled increase in business capital investment. Business sentiment recognizes that no fresh stimulus can be expected from automobiles and housing in 1956;

For high quality roof drainage that's easy to sell...

USE ARMCO STAINLESS

High quality roof drainage spells long range economy on any home. And in high-quality roof drainage, the *best*, stainless steel, *costs least*. That's one reason why it's easier to sell.

Easier sales mean more jobs and *more profit for you*. With Armco Stainless Steel they're better jobs too.

Here are the Armco Stainless quality "extras" that sell customers and build your reputation:

Extra savings. Roof drainage of tough, durable stainless steel saves your customers *as much as 20%* over other quality roof drainage. What's more, it needs no maintenance. Properly installed, it should last as long as the building.

Extra beauty. This satin-smooth steel blends perfectly with all building materials and color schemes. It won't stain or discolor adjacent areas.

Extra strength. Rugged Armco Stainless easily withstands snow and ice loads, resists buckling from temperature

changes, fights abrasion at elbows and mitered joints.

SEE YOUR ARMCO DISTRIBUTOR

Your nearby Armco Distributor can supply the Armco Stainless Steel you need for high-quality roof drainage and roofing jobs.

To assure trouble-free service use stainless steel hangers, hooks, nails, rivets, screws, and strainers. For names of suppliers of stainless steel roof drainage parts and accessories, just write us at the address below.



ARMCO STEEL CORPORATION

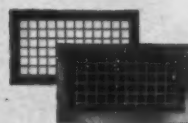
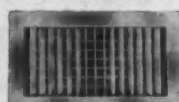
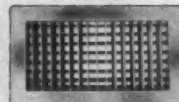
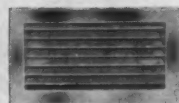
846 CURTIS STREET, MIDDLETOWN, OHIO



SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

GENERAL

the complete Quality line of



REGISTERS and GRILLES

for commercial cooling and ventilating

GENERAL REGISTER — a name now known thru the Industry for consistent quality — production-line quality of the standard of the sales sample.

A leader of the grille manufacturing field, with the finest of high-production, precision-tooled facilities, geared for volume output.

A product with the most advanced design features, including:

- Smooth, Solid Welded Frames
- Everything Streamlined
- Handsome Prime Coat Finish
- Original Silentite Damper
- Removable Damper Boxes
- Positive Stop Damper Setting

Investigate the Line that's "Second to None"!



GENERAL REGISTER
CORPORATION
14 FACTORY ST., CEDAR GROVE, ESSEX CO., N. J.

WASHINGTON LETTER —

they are unlikely to contribute as much support to the economy as in 1955. Virtually all housing experts anticipate that the number of homes built in 1956 will be less than the 1,330,000 started in 1955.

Avoid Boom-Bust Cycle

To maintain the state of well being achieved in 1955 and carry on its economic progress, the economy in 1956 must walk a tight rope, maintaining an uneasy equilibrium at a high level between inflation on one hand and deflation on the other. The problems of prosperity include the pressures on prices, the inefficiencies and bottlenecks and the over-optimism which accompany near-capacity operations. The economy does not yet show convincing signs that excesses have reached dangerous proportions, nor are they in any sense inevitable, but they could develop if we substitute enthusiasm for caution and emphasize prosperity to the extent that we forget its problems. The biggest problem of all is to slow down to a sustainable rate of growth without going through a cycle of boom and bust.

Predicts 'Get Tough' Year

There are over 500 industrial groups represented by trade organizations in Washington. C. D. Hudson is one of the most highly esteemed representatives among these organizations. He says: "It is the prediction of this observer that 1956 will be less comfortable and more conclusive than 1955. It will be a 'get tough' year. The United States will get tough with Russia's current leaders. The nation's defense agencies will be in a tough mood. Management will be a tough party in negotiations, and organized labor will be hard to move. This will be a prosperous year, like 1955, but the fruits of such prosperity will not be available for loose speculation or squandering.

"The past year produced new eco-



GROW BIGGER WITH

bryant

and here's one way you can

GROW BIGGER^{WITH}

bryant

Sell the Finest Line of Water Heaters Built Today

The Bryant Water Heater sells easily and quickly because these beautiful, efficient *Crystalglas* models give your customers:

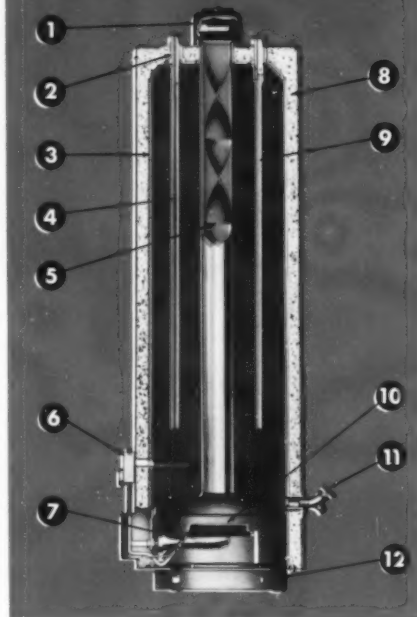
- Bryant "Horizon-Heat" Burners that provide a faster hot water recovery rate.
- A size for every requirement.
- 100% safety thermostat on all models.
- Truly low-cost operation
- ... and many other features (see right).

It's a Line Backed with Powerful Local Promotions

- A tremendous, sure-fire, complete dealer promotion.
- Complete sales promotion materials—news-paper ads, window display, store display, direct mail, etc.
- Personal assistance from your own Bryant, on-the-spot distributor.

Bryant is Growing Faster with the Finest Quality Line of Water Heaters Built. Get Full Details from Your Bryant Distributor, Today.

You can sell these great Bryant features easily...



1. **Draft Diverter**—Bryant exclusive. Compact design.
2. **Water Connection Fittings**—Solid brass.
3. **Heavy, Glass-lined Tank.**
4. **Dip-Tube**—Introduces cold water at bottom of tank.
5. **Center Flue**—Equipped with Bryant "Twist-N-Turn" baffle.
6. **Thermostat**—Controls water temperature at desired point.
7. **Pilot**—Target-type for efficient operation.
8. **Thick Glass Fiber Insulation.**
9. **Bryant Protect-O-Rod**—Gives additional "stand-by" protection.
10. **"Horizon-Heat" Burner**—New, radial type to provide faster water heating.
11. **Drain Faucet**—At lowest point of tank. Solid brass for added protection.
12. **Recessed Pedestal Base**—Low in height; sturdy, one-piece construction.

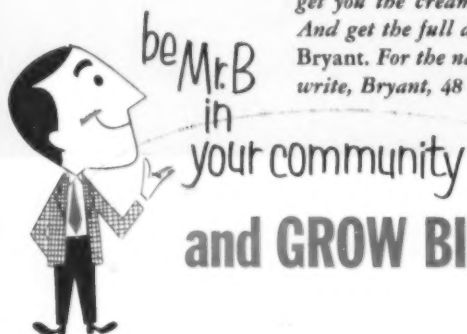
and here are 8 MORE reasons why you'll GROW BIGGER WITH BRYANT

1. Your customers know and trust the name Bryant... famous for 47 years as the leading name in home comfort. That's why a Bryant is easier to sell.
2. From small home to mansion, or for store or factory, there's a Bryant to fit the budget and the need in gas or oil furnaces, boilers, air conditioners, space heaters, unit heaters, water heaters.
3. You build customer confidence when you install Bryant... the highest quality heating, cooling and water heating equipment made.
4. You profit more with Bryant because of the Bryant

Business Development Program, the most complete program in the industry.

5. You get *sales building tools* that increase your sales and profits.
6. You have the help of a nearby Bryant distributor who gives you *complete engineering, sales and service help*.
7. You are backed up by *powerful national advertising* designed to help you.
8. You are given the most complete *co-op advertising* to build sales in your own community offered by any manufacturer in the industry.

Don't miss Bryant's big Water Heater Trade-In Promotion. It will get you the cream of the water heater business in your community. And get the full details of why it will pay you to grow bigger with Bryant. For the name and address of your nearest Bryant distributor, write, Bryant, 48 Monument Circle, Indianapolis 4, Indiana.



and GROW BIGGER with

bryant

WASHINGTON LETTER —

conomic strength and confidence, but it left many major issues unsettled. The year 1956 will disclose more clearly the shape and pattern of the future. Time may be running out. Urgency has replaced complacency.

"During 1956 the world will be nearer the brink of war than at any other time since the Korean cease-fire. As the automotive builders in 1955 added color and charm to performance, as the homebuilders eased household duties while making more space for family fun, and as myriads of new edifices of religious worship were raised in beauty and symmetry throughout the land, so in 1956 the people of the United States will make further notable gain on broad frontiers under their concept of maximum freedom and expression for the individual. It will be a rewarding year for those who try."

Air Trade Practice Rules

On January 20, the Federal Trade Commission held its final hearing on the proposed trade practice rules for the air conditioning industry and the refrigeration industry. The commission will now analyze and formulate the rules as they will be issued later for the guidance of the two industries.

The goal of the hearings is a definition by FTC of the functions of manufacturers and those of contractors.

The meeting was short and attended by a dozen representatives of industry, trade organizations and labor unions. The consensus was that when a manufacturer engages to any extent in the functions of a contractor he shall be subject to that extent to the rules and regulations that regulate contracting. The study will be mainly of borderline cases which are not clearly defined.

The government emphasizes that nothing in the trade practice rules relieves an industry member from compliance with any requirements of the Robinson-Patman Act.

COMPARATIVE DRAFT TEST

of 7" I.D. Packaged Chimneys at 700° F. Inlet Temp.

Reading At	Van-Packer Masonry Chimney	Metal Chimney "A"	Metal Chimney "B"
1 Minute	0.090	0.085	0.080
2 Minutes	0.090	0.085	0.080
4 Minutes	0.100	0.095	0.090
1 Hour	0.100	0.095	0.090

Independent laboratory tests proved Van-Packer Chimney reached maximum draft in 4 minutes. In a test at 300° F., Van-Packer Chimney maintained higher draft and showed less

cooling (more potential draft for next furnace cycle). The Van-Packer Chimney is guaranteed to produce more draft than any other chimney or flue of the same size and height.

You get highest draft for best furnace operation with the Van-Packer Chimney

Highest efficiency — independent laboratory tests prove Van-Packer Packaged Masonry Chimney produces more draft initially and continuously than any other flue of same cross-sectional area and height. Your heating installation operates best!

Furnace service call-backs cut by Van-Packer's greater draft. Van-Packer Chimney is quiet — won't transmit furnace noises and rattles. Good, clear profit for you on each chimney sale.

Safe, permanent masonry flue sections have 5/8" fire clay tile liner, 3" vermiculite concrete insulating wall, cement-asbestos jacket. Tile liner is acid-proof, sections joints sealed with acid-proof cement. Van-Packer is UL listed for all fuels, all home heating plants and incinerators; approved by major building codes.

Attractive brick-panel housing of cement-asbestos won't rust or dent. Beauty, permanence and safety of Van-Packer Chimney are nationally-advertised to builders.

Immediately available from your local heating jobber, no job delays. See "Chimneys-Prefabricated" in yellow pages of classified phone book, or write Van-Packer Corp. for Bulletin RS-1-11.

Van-Packer PACKAGED MASONRY Chimney

Van-Packer Corporation • Bettendorf, Iowa • Phone: Davenport 5-2621

furnaces You can count on



forced air gas by *Sequoia*

Anyone can make claims. SEQUOIA dealers have the proof of years, that it pays consistent profits to sell the line with consistent dependability. The importance of SEQUOIA dependability is accented on today's competitive market.

These are facts you, as a SEQUOIA dealer, can count on: Engineered for the easiest installation . . . Equipped with the finest quality parts obtainable . . . Sold everywhere at fair, competitive prices.

These are the furnaces you can depend upon: *Pacers* and *Closesteers* (uprights), *Rev-flo* (counter-flow), *Horizontals* . . . in all popular sizes for residential and light commercial.

WRITE FOR YOUR COMPLETE CATALOG AND TRADE PRICE LIST TODAY.

SEQUOIA MANUFACTURING CO.

1000 Brittan Avenue San Carlos, California

ANOTHER
KEY



SEQUOIA
DEALER

MORENO SHEET METAL WORKS of Lake Charles and Sulphur, Louisiana

Sequoia is proud to salute this key heating and air conditioning dealer of Southwest Louisiana, a key market in the growing South.

In this, their tenth anniversary year, founding brothers Arthur and Fred Moreno include three plants, a new \$30,000 office building and a still-growing staff of 25, among their many accomplishments.



NOW! ANOTHER STANDARD FIRST!

*throughout the house,
throughout the year,
solid comfort from here...*



...to here

NO BLASTS!

NO HOT SPOTS!

NO COLD CORNERS!



The B-24 maintains heating and cooling comfort at a new high level, because it spreads air evenly over outer walls, keeping floors warm, windows free of condensation, and rooms uniformly comfortable from floor to ceiling. It replaces lost heat immediately, where it's lost, and provides constant, gentle air circulation.

Adjustomatic Control! makes damper so easy to adjust a child can do it!

Easier to install in new or old construction! has built in damper; boot opening adjustable to max. of 12¼" x 14"; comes in 2 ft. sections, 4½" high!

Beautiful decorator design! modern lines, tan metallic baked-on enamel finish!

Act now! Mail the coupon today for FREE literature!

install Standard's
new **B-24**
perimeter
baseboard diffuser!



**STANDARD STAMPING
& PERFORATING CO.**

3137 W. 49th Place, Chicago 32, Illinois

Gentlemen: Please send literature and discount sheets on your new B-24 Perimeter Baseboard Register.

Name

Company

Address

City Zone State



Heating Brochure Hits Prospective Home Buyer

Promotional piece presented at model homes and home shows tells heating story and gives a rundown on the builder

THE PROBLEM OF reaching prospective home owners before they decide upon the house they are planning to purchase has been solved by Swett Bros., Inc., Springfield, Mass. This organization believes in getting the heating system story across early to the prospective home buyer. They have prepared a two-color, $8\frac{1}{2} \times 11$ in., four page brochure that gives the prospect some very pertinent facts to think about before he invests in a home.

The brochure has on its cover an illustration of a very attractive house and the title "Comfort in Your Home." Opening the brochure, the customer finds the words "Your Heating System" in 1 and 2 in. red letters spread across the top of the two inside pages. Along the vertical border of each page are drawings with color backgrounds, depicting the advantages of automatic heating equipment. The captions are short and to the point.

Commercial Approach Played Down

The printed message is pointed toward the interest of the prospect, and no commercial approach is made until the reader has almost reached the end of the message. The company name is brought into the subject in an offer to supply additional information dealing with any specific problems the prospect may have. The copy emphasizes that the firm has been in business for over 25 years and its personnel are qualified specialists. The company address is given for reference. Responsibility of the organization and the services available 24 hours a day are pointed out.

This consumer piece starts out with the question, "Would you like to know about your heating system?" and continues, "Yes, we mean your heating system, since it will belong to you should you decide to buy the house you are now looking at." The message continues the ap-

proach, "You want to be assured that you will be comfortably warm without excessive fuel cost. Your builder, who has had many years of experience building houses with various types of heating systems, chose this heating system for one reason only — to equip this house with the only heating system that will give you complete indoor comfort."

Five Points Emphasized

The text continues in the same vein to elaborate in everyday language on five important functions of a good heating system and to suggest how they can be had by any home owner who will investigate the heating system before he approves the contract.

The last paragraph brings in the feature of summer comfort and how easy it is to adapt a well engineered heating system to year 'round air conditioning.

The last page of the brochure tells something about the house builder. His experience in building, some recent local housing projects he has produced, the local social and business organizations to which the builder belongs and the activities he helps support are described. The methods of financing are briefly described and the address of the builder is given. All of this information is provided by the builder and evidence indicates that builders appreciate this consideration.

The brochures are passed out at private model home showings conducted by builders, development open house events where newspaper advertising has invited the public to see the project, and at home shows.

Mr. Russell F. Swett says the number of leads obtained, plus the good will built by these brochures, make them the most economical promotional piece his company has ever used.

IMPOSSIBLE FANTASTIC CAN'T BE DONE

That's what everybody said
until they saw positive proof that

**RHEEM GETS UP TO 95%
MORE COOLING CAPACITY
PER COMPRESSOR H.P.**

Now turn the page and read what Rheem has ready now...

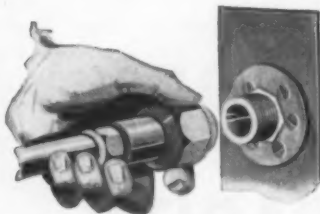
It's so important
so hard to believe
we'll say it again—

up to 95% more compressor h.p.—yours in air conditioner



Field Tested

Units were installed last summer in all types and size homes in the hottest sections of the country. All of the units performed perfectly—through some of the longest heat waves in history.



No Refrigeration Mechanic Needed!

All refrigerant line connections in the new Rheemaire unit are equipped with new quick connect fittings. No flare connections, no evacuating or charging the system. Any qualified heating contractor can install it—no refrigeration mechanic needed. Can be installed in less time—at lower cost.

This is big news—big news for builders—for home owners—and even bigger news for heating and air conditioning contractors from coast to coast. For now from Rheem comes the answer to profitable, practical home air conditioning. From Rheem comes a unit that answers every objection to units already on the market—it costs less to buy, less to install, much less to operate, takes up no usable space in the house, and eliminates the noise problem. Just imagine this—competitive home air conditioners on the market cost 50% more to operate than this amazing new unit.

Designed for homes with forced air heat—but adaptable to others—the new Rheem Home Air Conditioner cuts the cost of cooling and almost doubles compressor capacity with a patented, practical, workable way to cool the condenser with a combination of air and water—*without* costly recirculating systems (actually uses much less water than a cooling tower). Easily installed in one- or two-story homes—with or without basements. Just think of the profit possibilities—people who couldn't afford air conditioning before become good prospects, in addition to the thousands of home owners with window units who are already presold on air conditioning.

The new Rheem Home Air Conditioner is ready now. It's been tested and performance-proved by the finest air conditioning engineers, technicians, and consultants in the country, and every unit is performance-bonded for \$1000. So write to Rheem—right away—for the free booklet and complete facts about this amazing new air conditioner, and find out what the new Rheemaire can mean for you.

You can rely on



**RHEEM
MANUFACTURING
COMPANY**

Seattle • Houston • Chicago • South Gate, California • Sparrow's Point, Maryland

cooling capacity per a revolutionary new home ...the Rheemaire!

Makes complete home
cooling as practical
as home heating



PERFORMANCE BONDED FOR \$1000

Here's complete protection—and positive proof—that the revolutionary new Rheemaire is fully perfected, and thoroughly dependable. So carefully have these new units been tested—that Rheem guarantees payment of \$1000 if the Rheemaire doesn't operate satisfactorily at its rated capacity in any home. It's the only guarantee of its kind that you can offer to air conditioning customers!

**FREE
BOOKLET**

Write to Rheem on your company letterhead for full information about the amazing new Rheemaire. You'll receive an illustrated booklet with all the facts about this new home air conditioner.

Write to Rheem Manufacturing Company,
7600 S. Kedzie, Chicago 29, Illinois. Dept.
AA2.

Gasaver and
Oilsaver Furnaces



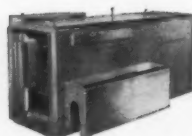
for the industry's most

DeLuxe Gas
& Oil Furnaces



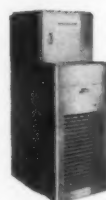
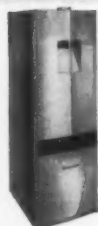
complete line of heating and

Super Gas,
Oil & Coal Furnaces



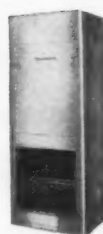
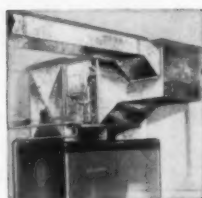
cooling equipment backed by

Special Gas
& Oil Furnaces



strong consumer promotion . . .

Wethermatic
Airefrigeration
Waterless Cooling Units



choose

WILLIAMSON

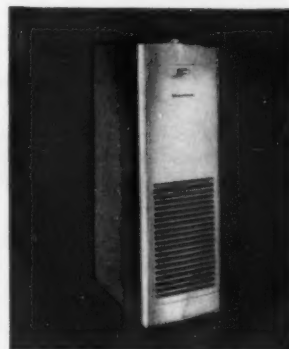
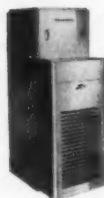
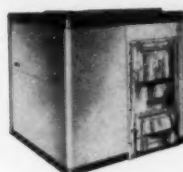
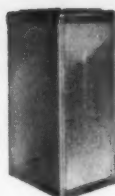
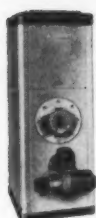


Blue-Gray Metalescent Finish

- New Designs
- New Models
- New Colors



Two-tone Hammer Finish Green



Gleaming White Enamel



As Advertised in Leading Magazines

THE WILLIAMSON COMPANY

3310 B-2 Madison Rd.

Cincinnati 9, Ohio

Gentlemen:

Please send me information on the following:

- ☐ Heating Equipment ☐ Cooling Equipment
☐ Duct, Pipe and Fittings

Name Title

Firm

Address

City Zone State

WHAT THE ASSOCIATIONS ARE DOING



STUDENTS ATTENDING COLLEGE SHORT COURSES, such as this one held at Purdue University in 1955, receive latest technical information from industry's leading authorities. Here the class is being addressed by Lorin G. Miller, chairman, Educational Advisory Board, National Warm Air Heating and Air Conditioning Association

Warm Air Heating Short Courses Scheduled

SHORT COURSES in warm air heating and air conditioning engineering and installation methods have been scheduled for eight colleges during the next three months. The courses are conducted by the colleges and universities using the manuals and work sheets published by the National Warm Air Heating and Air Conditioning Association. Where time permits, the courses are four days in length; however, three day courses, with evening classes to complete the work have been arranged for Penn State and Syracuse universities.

Planned to provide practical experience in estimating and selecting equipment required for a choice of three sample problems, the course will provide means whereby dealer service costs can be controlled by following recommended procedures that will reduce the chances for error when specifying equipment.

Among the many subjects to be discussed are: Air Conditioning Condensing Units, Heat Loss, Heat Gain, Air Distribution Systems for Heating and Cooling, Merits of Various Types of Warm Air Heating Systems, Humidity and Its Place in Residential and Commercial Heating, School House Heating, Friction Loss in Ducts and How to Improve Selling Techniques.

The course is open to dealers, wholesalers, manufacturers, contractors and their representatives. Certificates of completion will be awarded on the final day to those finishing the assignments. Registration fee is \$25 per

student. Living accommodations have been arranged for at a minimum rate for those wishing to stay on the campus. Dates and locations are as follows:

Feb. 20-23, Oklahoma A & M College

Feb. 29-Mar. 3, Purdue University

Mar. 28-30, Penn State University

Apr. 2-5, Michigan State University

Apr. 4-6, Syracuse University

Apr. 9-12, North Dakota State College

Apr. 16-19, Iowa State College

Apr. 23-26, Long Island T & A Institute (University of the State of New York)

Instruction will be given by members of the college faculties and industry authorities on the various subjects. For reservations write to:

Robert R. Irwin, School of Mechanical Engineering, Oklahoma A & M College, Stillwater, Okla.

Keith E. Glaney, Div. of Adult Education, Purdue University, Lafayette, Ind.

C. H. Pesterfield, Mechanical Engineering Dept., Michigan State University, East Lansing, Mich.

A. W. Anderson, North Dakota State College, Fargo, N. D.

Marvin Gould, Iowa State College, Station A, Ames, Ia.

T. A. Wright, Mechanical Engineering Dept., Penn State University, State College, Pa.

(Continued on page 50)

ECONOMY 2 H.P.

FOR YEAR AROUND
AIR-CONDITIONING
AND HEAVY DUTY
WINDOW COOLERS



MODEL B74T16
SINGLE PHASE

Tecumseh's

NEW air cooled HERMETIC COMPRESSOR

FOR FURNACE OR ATTIC SYSTEMS

WINDOW COOLERS

DIRECT OR ADD-ON UNITS

Now you can bridge the gap between 1½ and 2 H.P. compressors with the new Tecumseh hermetic. A single phase, air cooled compressor which will deliver 19,500 B. T. U. capacity at ASRE conditions, it affords adequate cooling for the smaller, low cost home at a considerable price reduction. Applied to an add-on furnace unit or attic system where full 2 H.P. capacity is not required, model B74T16 gives "economy" 2 H.P. performance and allows you to broaden your market for central air conditioning. It is also used in heavy duty window cooler applications.

Additional advantages are also realized in the inherent con-

struction features of Tecumseh hermetic compressors. The utilization of suction gas within the welded steel shell to dissipate motor heat gives more efficient cooling. Also, even though our tests indicate that the compressor can be properly lubricated with 30 ounces of oil, almost double this amount is used to give our customer an adequate safety factor. This extra insurance is particularly important when the system is started up after a long shutdown. The use of Freon 22 permits a more compact compressor design and lends itself to capillary tube application for additional savings in component parts.

You will agree, for economy and performance, Tecumseh's new hermetic compressor provides a practical answer to your air conditioning application.

TECUMSEH PRODUCTS CO.



The World's Largest Producer of Compressors for the Refrigeration Industry

EXPORT DEPT.—P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

Marion, Ohio
Tecumseh, Michigan



Shows
how to solve
duct liner equations
without a slide rule!

"How much of this duct should I line to attenuate 15 db of fan noise?"

Common problems like this can easily be solved when you have Gustin-Bacon's new 8-page brochure on Ultralite Duct Insulation and Duct Liner. And you won't need a slide rule — because Gustin-Bacon has plotted for you the values for 12.6a^{1.4} power at various absorption coefficients, as well as giving you the sound absorption coefficients of Ultralite Duct Liner at various frequencies. In addition, this new brochure will show you a new easy way to solve the problem of lining ducts that are not long enough to obtain the required decibel reduction.

The new booklet also contains a wealth of helpful information about Ultralite Duct Insulation and Duct Liner. You'll find specifications and instructions for insulating heating ducts . . . cooling or combination ducts . . . forming duct liner with the metal . . . applying surface finishes, both indoors and out. This information makes it easier for you to specify and apply Ultralite than any other duct insulation on the market. Ultralite is the only insulation of long glass fibers . . . the first flexible glass fiber duct insulation on the market . . . the easiest and most economical duct insulation you can use. Get the facts from your nearby distributor, or write today.

WRITE TODAY FOR YOUR FREE COPY

*Equation on pg. 942 of 1955 American Society of Heating, Ventilating & Air Conditioning Engineers Guide or in Gustin-Bacon's new Duct Brochure.

GUSTIN-BACON *Manufacturing Company* 

Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Molded glass fiber pipe insulation

226 W. 10th St., Kansas City, Mo.

more homes
heat with

Coleman

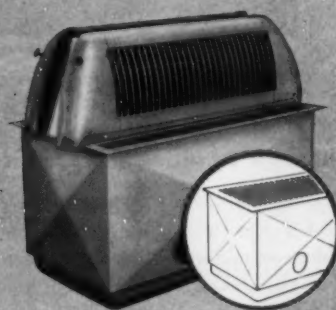
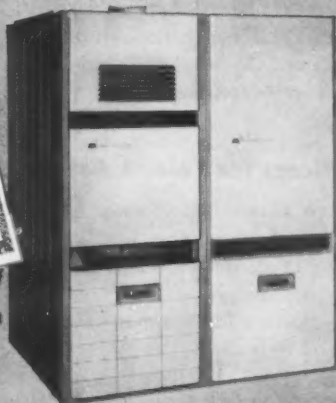
than any
other brand!

the TOP deal for TOP dealers

Only Coleman gives you a line that lets you sell *every* prospect no matter what his heating or cooling needs. And Coleman backs up your local selling program with the most powerful advertising and sales promotion helps in the heating and air conditioning industry. Let us show you how you can get bigger volume and profits. Write today!



the only system
backed by
\$1000 BOND



Blend-Air® HEATING AND COOLING. Only completely prefabricated system—slashes inventory and labor costs. Blend-Air furnaces in regular and TrimBoy models for new homes or modernization. Plenum and vertical cooling units for Coleman or other forced air furnaces.

The World's Most Famous HEATERS sell faster—with exclusive "Super-Circulation" for the most comfort, at lowest fuel cost. Sizes for 1 room or whole home, Golden Glow or Mahogany finishes.

World's Lowest-Priced Central Heating Plant

Gives the best circulation of any floor furnace—makes any home easy to heat! Easy, quick installation means lower cost for you.



GAS WALL HEATERS for one room or whole home. Giant grilles and air column double natural circulation of warm air. No other can equal it!

VIT-ROCK Gas Water Heaters. Two big exclusives help you sell! Exclusive rock lining can't rust.

backed by
**EXCLUSIVE 10-YEAR
\$500 Warranty Bond**



COLEMAN SINCE 1900—
makers of lamps, lanterns,
camp stoves, home heating
and air conditioning

NATIONALLY ADVERTISED

in

- LIFE
- Saturday Evening POST
- HOUSEHOLD
- SUNSET
- SMALL HOMES GUIDE

The Coleman Company, Inc.
Dept. AA-532, Wichita 1, Kansas

☐ Please send complete information on your full line of heating, cooling and water heating equipment. ☐ Send details of the Coleman Home Comfort Payment Plan.

NEW! Coleman's HOME COMFORT PAYMENT PLAN

Let's you offer **EASIEST
TERMS IN TOWN!** No risk
for you, no red tape! And
you'll close extra sales with
**NO DOWN PAYMENT—
3 YEARS TO PAY!**

GAS—OIL—LP-GAS

The Coleman Company, Inc.
Wichita 1, Kansas

Name _____

Firm Name _____

Address _____

Town _____ Zone _____ State _____

WITH THE ASSOCIATIONS

(Continued from page 46)

Miss Eleanor Ludwig, Coordinator of Conferences, Syracuse University, Syracuse, N. Y.

Wilson P. Merritt, Assistant Director Extension Program, Long Island T & A Institute, University of the State of New York, Farmingdale, L. I., N. Y.



AIR CONDITIONING CONTRACTORS Alliance elected officers for 1956 (l to r) Milton Hoge, Larry Ingham and Edward N. Stahler

Chicago Dealers Elect Officers

MEMBERS of the Air Conditioning Contractors' Alliance — Chicago warm air heating and air conditioning dealer-contractors — elected officers for 1956 at their January meeting. To guide the association for the next 12 months are: Edward N. Stahler, president; Milton Hoge, vice president; Larry Ingham, secretary-treasurer; and Theodore A. Criel, executive secretary. New director, in addition to the above officers, are Robert P. Johnsen, Barney Sanders, Ivar A. Anderson and Vince McGrath.

NHAW Appoints Committee Chairmen

WILLIAM H. BOWE, JR. has been named national chairman of the member relations committee of the National Heating and Air Conditioning Wholesalers, Inc. Heading the trade relations committee is Art Vorys. Other permanent committees and their national chairmen are: personnel testing, George F. Wheelock, Jr.; air conditioning, Frank Green; statistical, Bill Schoedinger; budget and audit, Bob Swart; standardization, Allen E. Burns; dealer management training, Bob Woodward; wholesaler management training, Ralph Bell; wholesaler sales training, Tom Delaney.

Kalamazoo Group Discusses Gas Heat

THE FEBRUARY MEETING of the Kalamazoo Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association was sponsored by the Consumers Power Co. "Do's and Don'ts of Gas Heating" was the subject under discussion. Featured at the January meeting was a film on safe driving supplied by the Ohio Oil Co.

Carolinas Names Committee Heads

W. RHETT HARTIN, JR., president of the Carolinas Roofing and Sheet Metal Contractors' Association, has appointed Roy Martin chairman of the group's joint construction committee and John Stanley chairman of the membership committee. W. H. Arthur, Jr. will head the labor relations committee, and John N. Johnson the suppliers relations committee. Other new chairmen are W. T. Fort, annual summer convention; Vick King, resolutions; R. C. Barnes, education; E. L. Scott, heating and air conditioning; Hilton Bowles, roofing and sheet metal; Vardry Ramseur, Jr., advisory; J. C. Ware, sick and welfare; Morris Apple, grievance; R. C. Barnes, nominating; Joe Piper, historical; James Kyle, finance; Gordon Waters, by-laws and legislative; and Walter Budd, midyear convention.

New Officers for Toledo Association

THE TOLEDO WARM AIR Heating Contractors' Association reports that Dick Paren has been elected president for the year 1956. Homer Wiler is vice president; Fred Walboldt, treasurer; and Jim Stanford, secretary. Directors are Howard Zimmerman and Kenny Epperson.

Plan Program for Canadian Show

THE NATIONAL WARM AIR Heating and Air Conditioning Association of Canada has accepted an invitation extended by the Oil Heating Association to participate in and conduct the speaking portion of the National Heating and Air Conditioning Show, which is to be held in the Automotive Building, Exhibition Park, Toronto, March 19 to 21.

Serving on the show committee are Mike Miller, Frank Thomson, and D. M. W. Wilson, managing director of the Canadian chapter, who reports that plans are developing rapidly and that the program for the 1956 show promises to be one of the most interesting ever presented.

Extended Coverage for Florida Workers

THE ROOFING and Sheet Metal Contractors' Association of Florida reports that Florida businessmen who employ four or more but less than eight workers are affected by recent legislation which has extended unemployment insurance coverage. Beginning January 1, 1956, according to a recent bulletin from the association, most employers in this category became subject to the payroll tax under Florida's amended unemployment compensation law. Charles M. Mann, director of the Unemployment Compensation Div., estimates that some 20,000 employers and about 100,000 employees are affected.

(More association news on page 54)

A.O. Smith Perm Maglas®

announces

the most modern, value-packed, profitable

HEATING and COOLING LINE

the industry has ever seen!



Perm Maglas® is on its way
... Are You Aboard?

Sales Department, Perm Maglas Division
A. O. SMITH CORPORATION, Kankakee, Illinois, Dept. AA-256
Please rush me details about Perm Maglas Heating and Cooling.

Name..... Title.....
Company.....
Address.....
City..... Zone..... State.....

High Temperature Ceramic Coating on every heat exchanger ends corrosion from heating, completely stops rusting caused by condensation from summer cooling. Guaranteed for 10 years!

Exclusive A. O. Smith Modulation with the Magic-Heat control ends "ON-OFF" heating, provides the world's only full-time comfort. No more "cold 70," no more cold floors. (Optional on gas-fired warm air units.)

World Famous A. O. Smith Corporation backs every unit, provides the guarantee that means something. A. O. Smith Product Service Branches provide nearby assistance, quick access to replacement parts.

Through research  ... a better way

A.O. Smith

Perm Maglas Div., Kankakee, Ill.
International Div., Milwaukee 1, Wis.

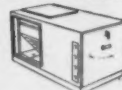
the only
really balanced
line ever built



YEAR-ROUND UNITS
Oil or Gas—100,000 to 160,000 BTU's. 2, 3 or 5 tons.
Water or air.



VERTICAL COOLING UNITS
2, 3 or 5 tons. Water or air.



HORIZONTAL COOLING UNITS
2 or 3 tons.



REMOTE COOLING UNITS
2, 3 or 5 tons. Water or air.
3 evaporator arrangements.



HI-BOYS
Gas—70,000 to 200,000 BTU's.
Oil—0.75 to 1.75 gph.



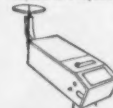
LO-BOYS
Gas—85,000 to 200,000 BTU's.
Oil—0.75 to 1.75 gph.



DOWNFLOWS
Gas—70,000 to 200,000 BTU's.
Oil—0.75 to 1.75 gph.



HORIZONTALS
Gas—60,000 to 140,000 BTU's.



GAS CONVERSION BURNERS
120,000 to 345,000 BTU's



HOME HEATING BOILERS
Gas—110,000 to 420,000 BTU's.

... and every one
competitively
priced!

Here it is...!
THE NEW "48-FRAME" MOTOR DESIGN
THAT GIVES YOU



**INDUSTRIAL
 QUALITY**



Everything you asked for and more. Smaller, yes...and better, too. Here is traditional Century dependability, smooth-running and quietness under load... now skillfully engineered into the compact new "48-Frame" design.

These great new Century "Industrial Quality" motors are now available in sizes from 1/20 to 1/3 H.P.... developed specially for industrial users.

**ON NEW EQUIPMENT OR
 FOR REPLACEMENT...**

when you see the red "C" on the new weight-saving, space-saving "48-Frame" motors, you're assured of Century's traditional industrial ruggedness. For information and for fast service, call or write your nearby Century District Sales Office or Authorized Distributor.

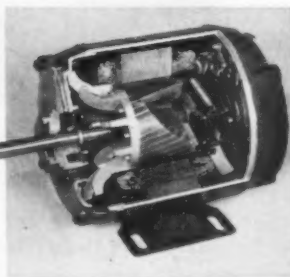
We Invite Your Comparison of...

engineering — Weight savings up to one-third are made possible without "skimping" on the vital "active materials", simply by eliminating dead weight and using new materials. The result is smaller-diameter motors that are not merely "just as good" but actually superior to the famous Century "56-Frame."



16.5 lbs. 23 lbs.

design—For time-saving maintenance, "GITS"-type oilers for sleeve bearings are placed high on the end-brackets, allowing easy oiling from either end of the motor... cluster-type integrally cast fan at the rear end of the rotor draws a steady stream of cooling air over the coilheads... "Square" stator iron permits air to pass between the core and shell, cooling the whole width.



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MOTORS
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Here's a machine that's almost a shop in itself!

shears plate (3/16" max.)

cuts inside shapes

... and bends, too!

notches angle iron

punches sheet

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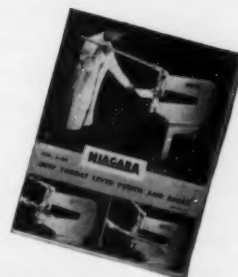
Niagara No. 5-24 Lever Punch & Shear

Because it's so productive . . . because it can handle so many different types of jobs, Niagara's No. 5-24 Lever Punch & Shear never sits on the sidelines. Its *continual* usefulness has been proved *repeatedly* in numerous industrial sheet metal shops, maintenance departments, experimental and model shops.

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throat, it can be equipped (optionally) as a punch or shear or brake . . . or *all three!* An unusually large selection of punches and dies is available for turning out a tremendous variety of work.

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WITH THE ASSOCIATIONS

(Continued from page 50)

Cites Unfair Criticism of Dealer

ROBERT WEAVER, secretary of the Sheet Metal, Furnace and Air Conditioning Association of Columbus, O. reports having read an article entitled "Furnace Gyps: You Either Get Swindled or Frozen" in a recent issue of a consumer magazine. As the title would suggest, Mr. Weaver writes, the article is a blanket indictment of the heating industry. "It's unfortunate," he says, "that the activities of a few unethical or unqualified dealers should be so publicized as to give the entire industry a bad name." To counteract such unfavorable publicity he suggests that every dealer should work toward a threefold goal: 1) Making sure that each installation is a technically correct and workmanlike job; 2) accepting the responsibility for the performance of the installation; and 3) obtaining a price that will make the installation of a quality system profitable to both the dealer and the customer.

Elect Officers at Milwaukee Meeting

OFFICERS ELECTED at a recent meeting of the Sheet Metal Contractors Association of Milwaukee are: president, A. T. Ihde; vice president, Ed Speeter; secretary, Charles Franchino; and treasurer, Frank Kramer. President Ihde has appointed the following to serve as chairmen of the group's various committees: apprenticeship, Frank Kramer; architectural sheet metal, Angelo Hoffmann; auditing, H. Eschenburg; entertainment, Lyle O'Leary; insurance, R. Mamayek; labor relations, Martin Schaar; legislative, Arnold Holming, Sr.; manufacturers and fabricators, Roland Biersach; membership, Michael Poja; publicity, R. Oelstrom; trade relations policy, Herman Reinke; ventilating, Ralph Winkler; warm air heating and air conditioning, William Droegkamp, Jr.; welfare board of trustees, Angelo Hoffmann.

Offer More Sheet Metal Instruction

SHEET METAL coordinators in the four California counties under Local 108 (Sheet Metal Workers International Association) are faced with overcrowded classrooms, according to the Institute of Heating and Air Conditioning Industries. The reasons, the institute says, are that since last March the apprentice enrollment registered with the State Division of Apprenticeship Standards has doubled and the four joint apprenticeship committees insist that apprentices attend every night class that is scheduled. To meet its problem, San Bernardino has employed a new sheet metal instructor and will hold two classes instead of only one. Pasadena also solved its increased enrollment problem by employing a new instructor and dividing its classes into sections. Other groups in the area are considering similar steps.

California Group Inaugurates Officers

THE SAN FERNANDO (Calif.) Sheet Metal and Heating Contractors' Association recently inaugurated new officers at an installation dinner attended by the wives as well as members. Max Green is the group's new president; Ray Wessel, vice president; and Charles Woods, treasurer. New directors are R. J. Bowen, A. W. Brady, Charles Brown, William LaCoste and Martin Hess. Guest speaker was LeRoy Frandsen, president of the Sheet Metal Contractors' Association of Southern California.

Michigan Develops Convention Plans

CONVENTION PLANS are progressing rapidly according to N. J. Biddle, secretary of the Michigan Heating and Sheet Metal Association, which plans to hold its 45th annual convention March 22 and 23 at the Hotel Fort Shelby, Detroit. Secretary Biddle reports that one of the features will be a panel discussion on summer and year 'round air conditioning by a group of experts who will cover various phases of this subject. A major part of the convention, he says, will be devoted to discussions outlining the dealer-contractor's place in the industry and to making him aware of his obligations — to the industry, to the public and to himself. Telephone book advertising will also be discussed. Some of the cities, Mr. Biddle states, have done an excellent job in handling such advertising. Further information will be given at the convention on this subject.

St. Paul Group Elects Officers

THE ROOFING, Sheet Metal and Air Conditioning Contractors' Association of St. Paul elected the following officers at its recent annual meeting: president, Robert O. McPhillips; vice president, Dwight H. Farnham; secretary, Ervin B. Belisle; and treasurer, O. Christen. Serving with the officers on the board of directors are David D. Diamond, A. L. Gaughan, Herman Hertzner, C. P. Neil and Harry Wahl.

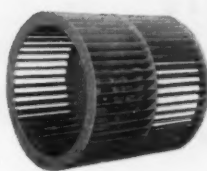
Find Safety Program Pays Off

RICHARD W. FRIDAY, secretary of the Master Sheet Metal, Furnace and Roofers' Association (Rochester, N. Y.) reports that the association's group compensation insurance has proven a profitable investment. He writes that a dividend of 22½ percent was declared for the year ending April 1, 1955, and over \$28,000 was added to the surplus fund. "This dividend," Secretary Friday says, "plus the new lowered rates to take effect April 1, 1956, shows the value of planned safety programs."

(More association news on page 58)

Prepare for the Higher Pressure Trend

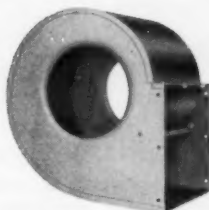
Check the potentials of Clarage Fan Equipment



Equip your Air Conditioning Units, Cooling Towers, Evaporative Condensers, etc., with Clarage Type DF Wheels and Housings, or Complete Fans.

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RECEPTION OF**



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COMBUSTION CHAMBERS

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reorganizing ...**

First of all, we're joining forces with the Fireline Stove and Furnace Lining Co., a well established firm in this field with whom you are undoubtedly familiar. Through this alliance, our new organization — Insul-Lyte Corporation — now enjoys a reliable source for raw materials of uniform high quality. You, in turn, benefit from uniformly dependable products.

Secondly, Insul-Lyte Corporation now becomes a division of the Plibrico Company, originators and developers of plastic and castable refractories. Plibrico's forty plus years of refractory and combustion experience stand behind our new affiliation for your benefit.

**adding
more
products ...**

Now we offer you domestic and commercial refractories known for their quality and performance . . . Fireline refractories. They include a type and grade for all hearth and combustion chamber lining work. Economical Fire-Hearth, Firelite and first-quality Super-Hearth are castable: Fireline is plastic. Simple to use, all form durable monolithic linings of any size or shape.

Fireline refractories round out our line: now from one source you can obtain either lining materials or our pre-cast Insul-Lyte combustion chambers, so well received for their fast heating and fuel saving qualities.

**with fine service
... as usual!**

Personal, efficient service . . . capable assistance with any problem — these are features which, in addition to quality products, have been responsible, we feel, for the valued associations we've established. With our new organization, we'll not only be able to continue this fine service, but also to expand it.

At your service still will be your friends J. R. Crosby and E. N. Wash, vice-presidents of the newly created Insul-Lyte Corporation. If you have any questions about combustion chambers or domestic and commercial refractories, we suggest that you sample the service we brag about by contacting one of these men soon. They will be pleased to assist you in every way they can.

INSULATING CASTABLE CORP.

is now

INSUL-LYTE

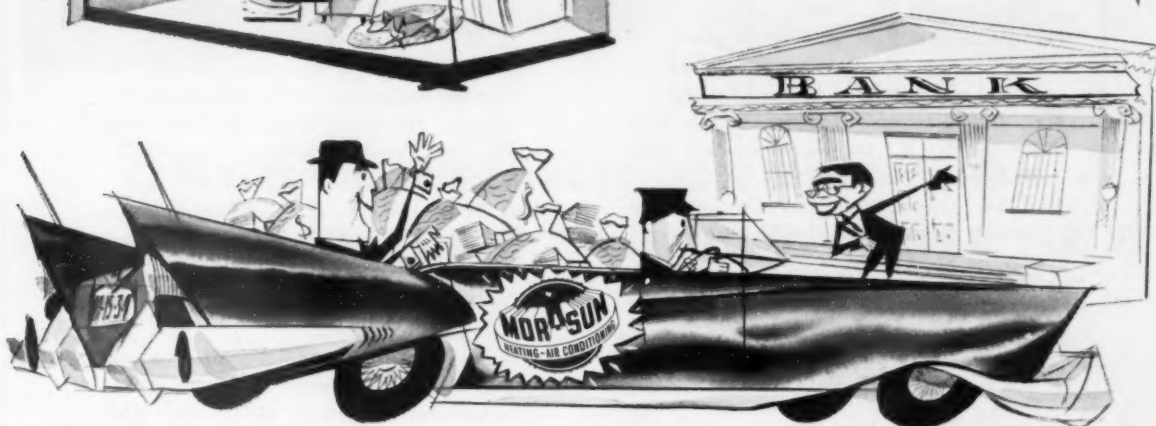
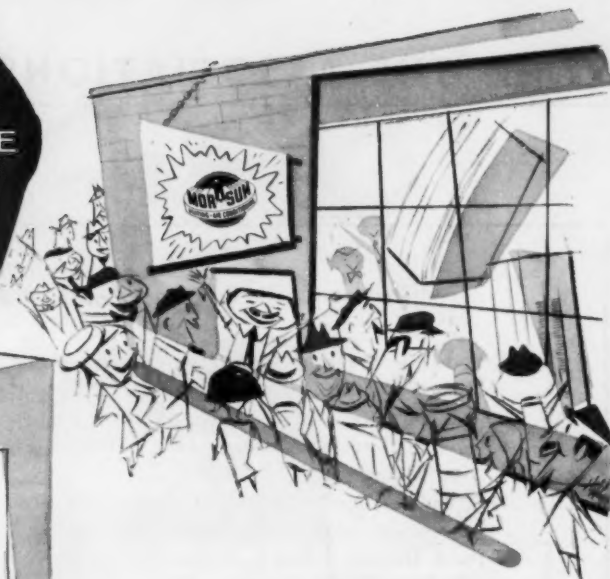
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- BIGGER PROFITS



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MOR-SUN

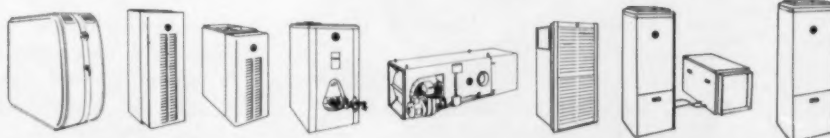
HEATING AND AIR CONDITIONING

Here are the reasons YOU should be a Mor-Sun Dealer...

- A COMPLETE LINE** of warm air heating and air conditioning equipment.
- QUALITY DESIGN AND CONSTRUCTION** that ensures customer satisfaction.
- THE RIGHT SIZE...THE RIGHT PRICE** for every home heating and cooling market.
- NATIONWIDE DISTRIBUTION** with immediate delivery from local stocks.
- SALES TRAINING** sponsored by Mor-Sun—practical, professional "how-to-sell" instruction.
- NATIONAL ADVERTISING** that pre-sells Mor-Sun, builds customer recognition and acceptance, boosts your business and profits.
- SALES PROMOTIONAL HELPS**, selling tools to help you interest the prospect and close the sale.
- CO-OP ADVERTISING PLAN** for your local use—newspaper, radio, TV, and other approved media.

FOR ALL THE DETAILS of one of the soundest business opportunities open to heating dealers, see your nearest Mor-Sun Distributor—he's listed in the Yellow Pages of your telephone directory—or write directly to: Mor-Sun Furnace Division, Morrison Steel Products, Inc., 609 Amherst Street, Buffalo 7, N.Y.

THE COMPLETE LINE

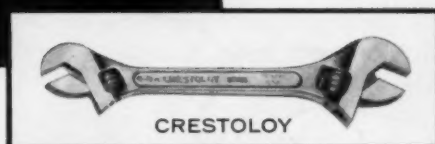


● There's a Mor-Sun Warm Air Furnace and Air Conditioner for every home heating and cooling requirement... the right size... the right price... for new construction or modernization.

Also manufacturers of Morrison Roly-Door Steel Sectional Overhead Doors and Morrison Service Bodies

Coming Events

- Feb. 16-18—Sheet Metal and Roofing Contractors Association of Minnesota, Inc., annual convention. Nicollet Hotel, Minneapolis. Tom Burnice, Chairman, 4432 Chicago Ave., Minneapolis.
- Feb. 20-22—Ohio Sheet Metal Contractors Association, annual convention. Biltmore Hotel, Dayton. Robert L. Butler, Chairman, 138 Ringgold St., Dayton.
- Feb. 27-28—Louisville Indoor Comfort Conference. Lee F. Tinsley, Sr., Chairman, 2300 Frankfort Ave., Louisville 6, Ky.
- Mar. 1-2—Cincinnati Indoor Comfort Conference. G. W. Denges, Chairman, 3500 Madison Rd., Oakley 9, O.
- Mar. 5-6—Columbus Indoor Comfort Conference. Newt T. Hess, Chairman, 63 E. Goodale St., Columbus 8, O.
- Mar. 8-9—Pittsburgh Indoor Comfort Conference. Paul S. Agey, Chairman, 850 Pennsylvania Ave., Pittsburgh 33.
- Mar. 11-14—Sheet Metal Contractors Association of Wisconsin, annual convention. Hotel Schroeder, Milwaukee. R. S. Schmieder, Executive Secretary, 8320 W. Blue-mound Road, Milwaukee.
- Mar. 12-13—Lewisburg Indoor Comfort Conference. W. J. Busser, Jr., Chairman, Lewisburg, Pa.
- Mar. 15-16—Newark Indoor Comfort Conference. Edw. S. Franklin, Chairman, 156-158 Badger Ave., Newark 8, N. J.
- Mar. 22-23—Michigan Heating and Sheet Metal Association, Inc., annual convention. Hotel Fort Shelby, Detroit. N. J. Biddle, Executive Secretary, 3035 E. Grand Ave., Detroit 2.
- Mar. 23-24—Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, annual convention. Penn Harris Hotel, Harrisburg. E. W. Liebermann, Secretary, 1411 Merchant Place, Ambridge, Pa.
- Mar. 26-27—Cleveland Indoor Comfort Conference. John Petri, Chairman, 6420 Woodland Ave., Cleveland.
- Apr. 16-17—Sheet Metal Contractors Association of Illinois, Inc., annual convention. Abraham Lincoln Hotel, Springfield, Ill. Jay E. Harms, Secretary, 1619 N. Sheridan Rd., Peoria, Ill.
- Apr. 19-21—Gas Appliance Manufacturers' Association, annual meeting. The Greenbrier Hotel, White Sulphur Springs, W. Va. H. Leigh Whitelaw, Managing Director, 60 E. 42nd St., New York 17.
- Apr. 27-28—Roofing and Sheet Metal Contractors' Association of Florida, annual convention. Suwannee Hotel, St. Petersburg, Fla. Don Brown, President, 735 17th St., N., St. Petersburg.
- May 7-9—Air-Conditioning and Refrigeration Institute, annual meeting. The Homestead, Hot Springs, Va. George S. Jones, Jr., Managing Director, 1346 Connecticut Ave., N. W., Washington 6, D.C.
- May 9-12—Sheet Metal Contractors' National Association, Inc., annual convention. Shoreham Hotel, Washington, D.C. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.
- June 11-15—Oil-Heat Institute of America, Inc., exposition and annual convention. The Coliseum, New York, N.Y. R. H. L. Becker, Managing Director, 500 Fifth Ave., New York 36.
- June 18-20—American Society of Heating and Air-Conditioning Engineers, semi-annual meeting. Shoreham Hotel, Washington, D.C. A. V. Hutchinson, Executive Secretary, 62 Worth St., New York 13.
- June 21-24—Carolinas Roofing & Sheet Metal Contractors Association, annual convention. Ocean Forest Hotel, Myrtle Beach, S. C. Julian M. McKeithan, Secretary, 1219 Fairway Dr., Wilmington, N. C.
- July 19-22—Roofing and Sheet Metal Contractors' Association of Georgia, annual convention. General Oglethorpe Hotel, Savannah, Ga. B. L. Noblitt, Secretary, P. O. Box 1196, Augusta.



CRESCENT AND CRESTOLOY outsell all other **ADJUSTABLE WRENCHES**

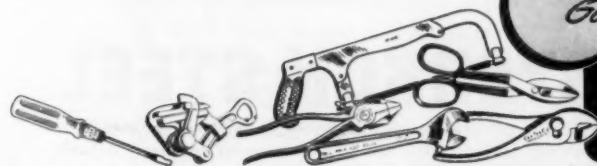
CRESTOLOY Wrenches are forged from a special alloy steel permitting thinner, trimmer design with greater strength and less weight than conventional types. They are available in Single End patterns, 4" to 24" size. Double-end in four models combining 4-6; 6-8; 8-10; 10-12 inch sizes. The 15", 18" and 24" sizes, available in Single End pattern only, are distinguished by their tapered handles. There is no stronger or finer Adjustable Wrench than CRESTOLOY.

CRESCENT Wrenches are forged from selected carbon steel and specially heat-treated to increase their toughness and durability. Due to their lesser cost and relatively great strength, they are widely used in industrial and service operations where thinness is not essential. Available in Single End Patterns, 4" to 18".

Both CRESCENT and CRESTOLOY Wrenches represent the best in design and workmanship, and carry the same guarantee.



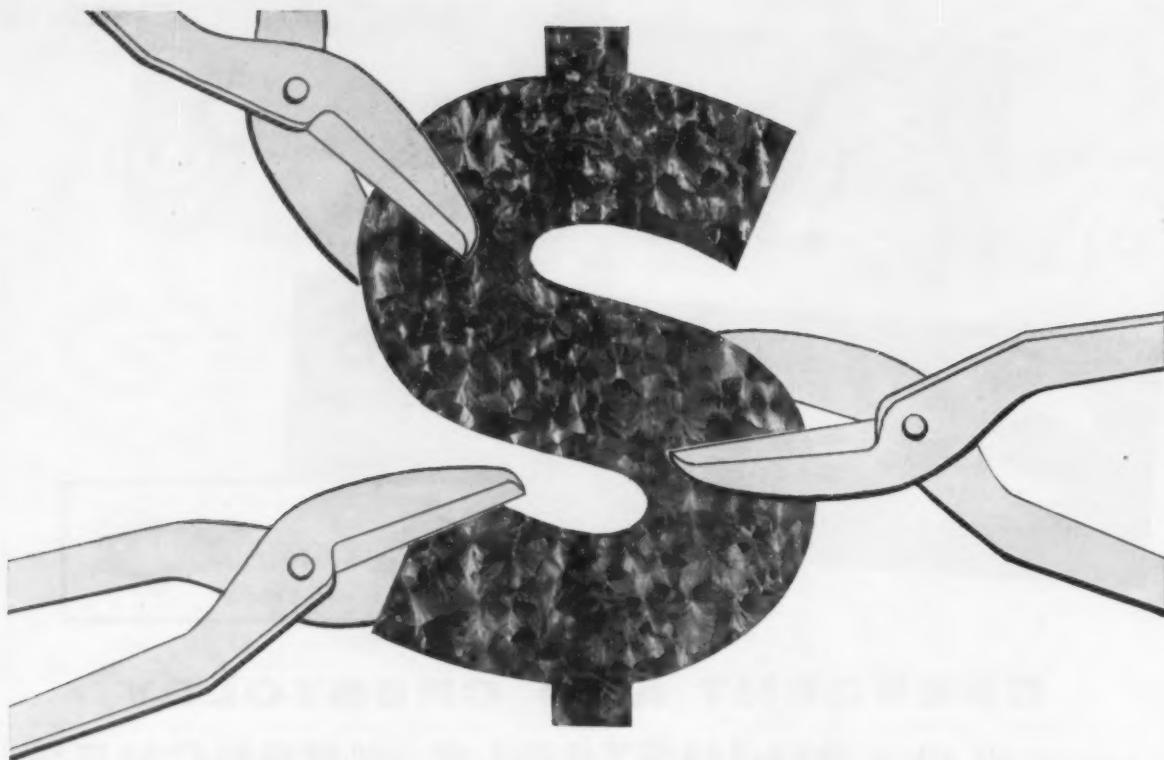
CRESCENT and CRESTOLOY TOOLS are sold by hardware dealers and industrial distributors everywhere. Look for the bright yellow Crescent Display panels and select from one of the world's greatest assortments of quality hand tools.



CRESCENT TOOLS
Give Wings to Work

*Sign of the Artisan
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Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by
CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK



Cut costs 3 ways! with Ryerson Service on Galvanized

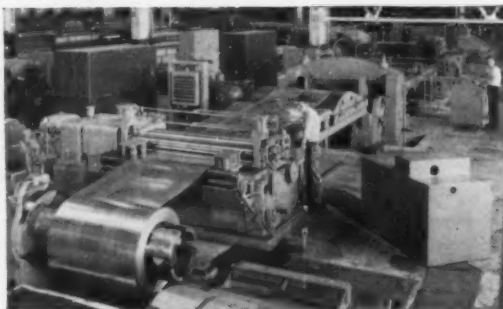
1. Save on inventory costs. You don't have to worry about tying up capital and shop space with steel inventories . . . you can depend on Ryerson for prompt delivery from the world's largest stocks.

2. Save by reducing scrap loss. You don't have to pay sheet steel prices for scrap . . . you can reduce scrap loss to a minimum by taking advantage of our cut-to-length service. In fact our wide range of coil widths may often enable you to eliminate scrap altogether. Pattern sizes also available.

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And, of course, you can count on Ryerson for galvanized sheets that are bright, ductile, true-to-gauge, and uniform in coating—sheets that

give you a head start on high quality products. Also, on a single order you can include every kind of steel that you need—hot and cold rolled carbon steel, stainless, Ry-Ex expanded metal, bar-size angles, bands, etc. So save time, trouble and money—every time, call your nearby Ryerson plant when you need steel.



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CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



A
Blueprint
for
More Business

WHAT IS PLANNED and expected to be "the nation's greatest home modernization drive" — Operation Home Improvement — was launched last month. The official kickoff to the campaign was given by HHFA Administrator Albert M. Cole, who urged the American people to "join President Eisenhower and the forces of private enterprise in a concerted effort to obtain nationwide improvement of the country's homes."

Though the government has approved the principles behind this program, there is no other connection between Operation Home Improvement and the federal housing program. The government of the United States is standing on the sidelines, giving encouragement and best wishes but following a hands-off policy. This is to be a private enterprise program sponsored by many segments of the home building industry.

Although an announcement of this program was made to the readers of business magazines late in 1955, the public had not received notice of the activity until the formal launching January 16. Much of the groundwork has already been laid by the non-profit sponsoring organization in its efforts to make 1956 the year in which blight and deterioration of the nation's homes will be arrested. For its slogan, Operation Home Improvement has selected the phrase, "1956, the year to fix."

One of the tools immediately available to dealers and contractors is an advertising and display kit that can be used to tie national and local promotion directly to the dealer's own operation. The kit can be obtained from Operation Home Improvement, 10 Rockefeller Plaza, New York 20, N. Y.

We feel that any activity directed toward improving living in the home is well worthwhile. In reviewing the many opportunities to improve the environment of a home, we feel that those that affect comfort are the most important. Many of the older heating systems in use today are performing satisfactorily; however, improved equipment and newer methods of air distribution since their installation have outdated many of them. Thus, a large part of the market for home heating modernization is found in the millions of prewar one-family homes now in use.

The market for central residential cooling systems has barely been scratched, according to the latest industry tabulations. Only a small fraction of one percent of the single family homes in use today have central cooling. It is expected that interest created by Operation Home Improvement will result in the sale of many additional central summer cooling systems as consumers hear more about the advantages to be gained from modernizing their homes.

The potential annual dollar volume for modernization has been calculated to exceed the dollar volume pouring into the 1¼ million new homes being built each year. One of the reasons behind this estimate is the latent demand for modernization. The desire for a new or revamped heating system or for home air conditioning can be developed through advertising, publicity and promotional campaigns such as are now under way and guided by Operation Home Improvement.

Dealer-contractors can cash in on the national promotion by stressing in their own promotion and selling that "1956 is the year to fix." And that nothing in the home is more important and more worth "fixing" than the comfort provided by a well-designed and well-operating heating and air conditioning system.



AIR CONDITIONING HANDBOOK

How to Solve Engineering
and Installation Problems

Upgraded Modernization Job Gives New Look to Old House

When the owner of a 32 year old, two story house decided to replace his old gravity furnace, the dealer produced not only an efficient warm air system, but also a summer cooling system, utilizing much of the original equipment

By S. W. Reid

**Air Conditioning Engineer
Gilbert Associates, Inc.**

THERE ARE MANY standards commonly used in judging the "up-to-dateness" of a home. Bathrooms and kitchens, for instance, are two spots where obsolescence is particularly evident. The reason for this is not so much that the old equipment is worn out as that accepted standards of function, design and convenience are constantly being improved. A few years pass and the contrast between old and new creates very strong desires for modernization.

Like the bathroom and kitchen, the heating system puts a date on a house. Within the last few decades there has been an accelerated evolution in inside climate control which has been consistently changing the answer to the question, "What is the latest thing in home heating?" At one time central heat alone was enough to talk about. Then came controlled central heat, then controlled automatic central heat, and perhaps we now have what might be described as clean, precisely controlled, automatic, central, year 'round climate conditioning. The future will bring continued improvement which will probably be seen more in the means for

accomplishing the results than in the results themselves, for we have available today equipment which can maintain any year 'round indoor climate we may desire.

Modernization Is Called For

Our article this month concerns a 32 year old house in a well established neighborhood. Because the general tone of the area has remained high over the years, the present owner has not been hesitant about increasing his investment in the house from time to time to keep it from falling into disrepair and obsolescence. As is partially evident

THIS NEW SERIES, based on actual interviews with dealers, covers known problems and suggestions for improved techniques in engineering, installing and servicing of residential air conditioning systems and their components. Previous series by S. W. Reid have been published continuously since August 1952, beginning with fundamentals and continuing through the treatment of specific problems since the fundamentals series was concluded in January, 1954. Highlights of the previous discussions and a preview of things to come are listed below:

Previously covered are . . .

Controlling humidity regain with cooling coil bypass when the condensing unit is off Jan. 1956
 Sizing refrigerant lines for remote installations . Dec. 1955
 Determining if the blower used for an existing warm air heating system is large enough for summer cooling Nov. 1955
 Eight combinations for arranging heating and cooling equipment, the advantages and disadvantages of each Oct. 1955
 Review of air flow patterns for cooling applications with recommendations for selecting and locating registers Sept. 1955

On the fire are . . .

Methods by which heat gains can be reduced
 Problems involved in converting water cooled equipment to air cooled equipment
 Effect of introducing outside air into a residential air conditioning system
 Effect of oversizing and undersizing cooling equipment
 Important factors to weigh when installing evaporators

from the illustration, the house and yard have been kept in good repair by regular maintenance. Conditions are equally good inside, and inspection of the three vital spots described previously, where age is particularly noticeable, reveals that the owner is not unmindful of the value in keeping the house up to date.

The house has very simple lines and is of frame construction with two stories plus an attic. The house faces north. The structure at the rear is a detached garage. Figs. 1 and 2 show first and second floor plans respectively. The second floor ceiling is insulated. The attic is used for storage only.

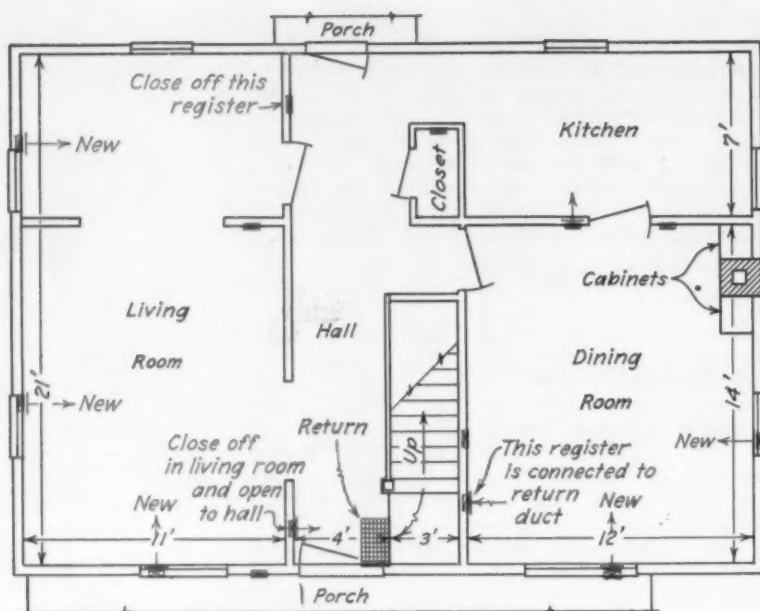
The house was originally heated by a coal fired gravity warm air system as shown on the basement plan, Fig 3. All leader pipes carrying air from the furnace bonnet were 8 in. diameter and had a minimum pitch from the furnace up to the boots of about 1 in. per ft for the longest run.



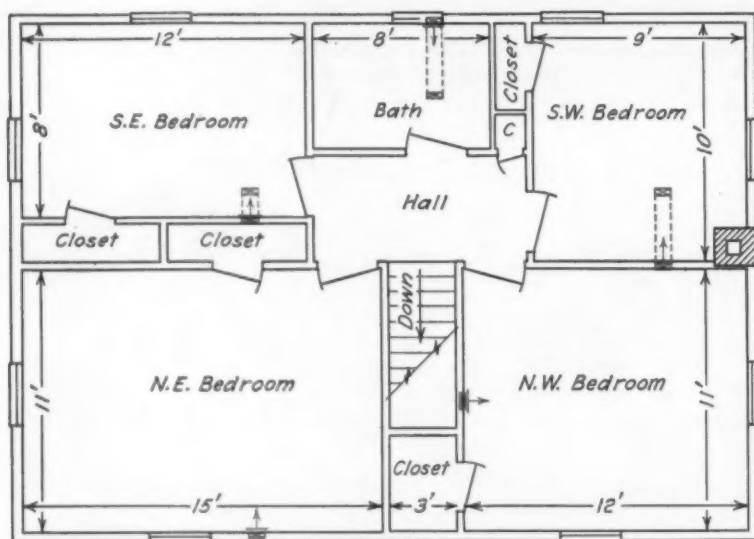
REGULAR MAINTENANCE kept this house in good repair but heating system fell far short of satisfactory until remodeled heating system provided year 'round comfort

By today's standards the original installation left much to be desired. It was never possible to maintain comfortable conditions in the eastern half of the house. Part of the difficulty was in the long leaders required to reach these rooms because the cellar stairs interfered with a central furnace location.

Distribution in the living room was far from satisfactory in temperatures below 30F. The long exposed east wall was not reached by warm air from the two registers. Consequently cold downdrafts constantly fell off the wall and moved across the floor toward the hall. The condition was so severe at times that chairs



1 FIRST FLOOR register location diagram was used in dealer's presentation to show how perimeter wall registers would eliminate down drafts and cold walls



2 SECOND FLOOR supply locations were used for new system, with up-to-date registers installed for improved distribution

on the east side of the room could not be used because of the uncomfortable effect from the cold wall.

Control of the original system consisted simply of manual damper adjustment to regulate the combustion rate. Needless to say, this entailed frequent trips to the basement to make whatever change was necessary.

There were other shortcomings in

the original system. The manual labor involved in handling the solid fuel and ashes was substantial and certainly not relished. Furthermore, the dust and dirt that entered the living quarters through the duct system was considerable, since there was no air filter. Not the least of the undesirable features of the gravity installation was the monopoly which the duct

system had on basement space. The leaders were relatively large as described, and the need for upward pitch brought them below head level near the furnace.

The original furnace lasted 14 years. It was replaced by a similar furnace of better quality. Two years after the new furnace was installed, the house was sold. The new owner lived with the system one season and decided he could eliminate many of the objections in the original arrangement by converting to liquid fuel and by adding a blower-filter unit to improve distribution and reduce the carryup of dirt and dust. He felt he should keep the furnace, since it was only three years old at the time he decided to make the changes.

Alterations Fall Short

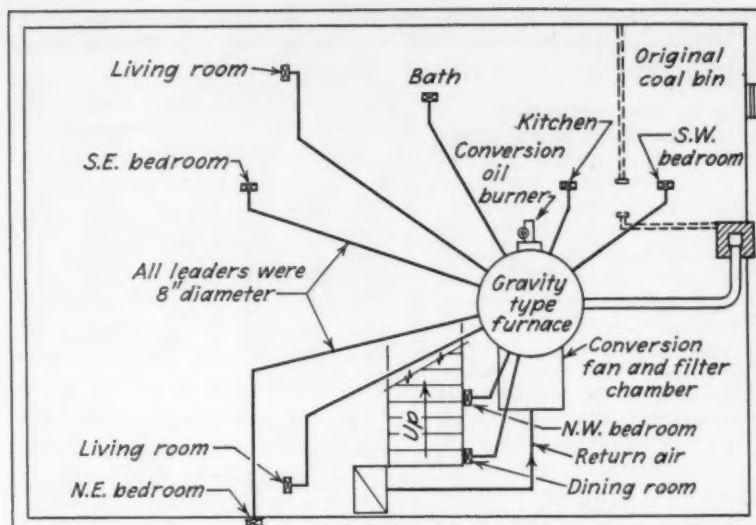
The alterations made in 1940 served the owner quite well until 1955. He was never quite satisfied, however, with distribution in the living room even though the addition of the blower permitted the use of improved registers which made the room much more comfortable than it had ever been before. The forced circulation also improved conditions in the two eastern bedrooms and made it possible to balance temperatures throughout the house much more evenly than had ever been possible with thermal circulation. When the conversion was made, a thermostat was, of course, included as a part of the improvement.

Over the past few years the owner became increasingly aware of the rising cost of fuel and began to consider ways of reducing his heating bill. He also had to pay several rather large repair bills which started him thinking that perhaps his heating system had reached the end of its economic life. When he looked back through his records last year he was surprised to recall that his furnace was 18 years old and that his oil burner had served him for 15 years.

The house is located in one of the north central states where heating is of prime consideration as compared with summer cooling. The owner, therefore, was not particularly inter-

Condensed History of the Heating System:

- 1923:** House was built and original coal fired gravity warm air system installed.
- 1937:** Original owner installed a new furnace.
- 1939:** House was sold to present owner.
- 1940:** Present owner installed oil burner and fan-filter chamber.
- 1955:** Second furnace replaced by year 'round system.



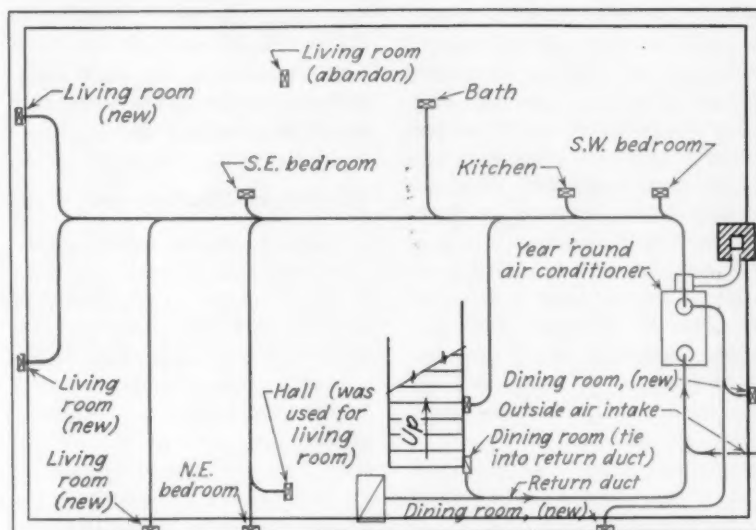
3 ORIGINAL GRAVITY furnace left much to be desired. A major disadvantage was location of stair well which required too-long leaders for east half of house

ested in cooling. He contacted several warm air heating dealers with good community reputations and asked for a survey and estimate from each for the latest type installation of a forced warm air system for his house.

Two of the dealers were satisfied to give him exactly what he requested with no questions asked. The third dealer, however, became quite interested in the problem and recognized an opportunity for selling the owner on a complete year 'round installation. He knew he would first have to sell the idea of cooling, and he also knew that he would have to present the complete story, with supportable facts and figures.

Comparison Charts Drawn Up

Proceeding in an orderly fashion, the dealer made heating and cooling load calculations based on methods recommended by the National Warm Air Heating and Air Conditioning Association. Two sets of figures were drawn up. One set pointed out the loads for the house as it stood with insulation above the second floor ceiling only, the other showed the effect of adding blown insulation in the walls. According to the figures, the wall insulation would save about 28 percent of the total cooling requirements. This was enough to bring the



4 NEW YEAR 'ROUND system made much more space available in basement; ducts were tied in to existing boots and risers wherever possible.

cooling load within the capacity of a 2 ton cooling unit as compared with the 3 ton size which otherwise would be required.

Furthermore, the wall insulation would also effect a reduction in the heating load and would be a step toward easing the owner's concern about the rising cost of heat.

The dealer's presentation, based on Table 1, was well received by the owner who was quite impressed by the careful preparation of the facts. The dealer was successful in upgrad-

ing a heating plant sale to include cooling, and a contract was signed for the entire modernization program.

Fig. 3 shows the heating system arrangement the dealer found when he entered the picture. He studied the system with reference to each room shown on Figs. 1 and 2 to see where improvements in distribution might be made. The contract called for using the original risers so far as practical.

It appeared that the second floor supply locations would serve well for

TABLE 1—TOTAL HEATING, COOLING load calculations based on NWAHACA recommendations were included in dealer's presentation for year 'round air conditioning job

Location	Col. 1		Col. 2		Col. 3		Col. 4		Col. 5		Col. 6		Col. 7		Col. 8	
	No Wall Insulation		With Wall Insulation		No Wall Insulation		With Wall Insulation		No Wall Insulation		With Wall Insulation		No Wall Insulation		With Wall Insulation	
	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm	Cooling Btu/h	Cfm
Living room	2723	131	1770	85	100	49	9490	5187	137	137	137	137	137	137	137	137
First floor hall	966	47	771	38	45	4255	3528	93	93	93	93	93	93	93	93	93
Kitchen	2658	128	2042	98	115	4227	2332	61	61	61	61	61	61	61	61	61
Dining room	3062	147	2255	108	127	5830	3244	86	86	86	86	86	86	86	86	86
First floor stairway	94	5	27	1	1	472	134	4	4	4	4	4	4	4	4	4
N.E. Bedroom	1893	91	1356	66	78	6660	3983	106	106	106	106	106	106	106	106	106
S.E. Bedroom	1718	83	1167	56	66	5510	3277	87	87	87	87	87	87	87	87	87
Bath	560	27	331	16	19	2060	1257	33	33	33	33	33	33	33	33	33
S.W. Bedroom	2715	131	2028	98	115	5105	3099	82	82	82	82	82	82	82	82	82
N.W. Bedroom	2957	142	2198	106	125	6430	3754	99	99	99	99	99	99	99	99	99
Second floor hall	104	5	104	5	6	293	293	8	8	8	8	8	8	8	8	8
Second floor stairway	58	3	58	3	3	161	161	4	4	4	4	4	4	4	4	4
Total internal sensible	19,508	940	14,107	680	800	50,493	30,260									
Ventilation 15 percent	2926		2116													
Latent heat 30 percent	5852		4232													
Total cooling load	28,286		20,455													
Cfm		940		680	800											800
Outside air, 1 change per hr						14,200	14,200									
Total heating load						64,693	44,460									

*800 cfm is rated air capacity for 2 ton unit

the new system. However, it was necessary to select modern registers for each room as the old gravity grilles were still in place. These were all located just above baseboard level.

For the southeast, southwest and northwest bedrooms which have supply outlets on inside walls, the dealer selected double deflection registers with multiblade dampers which drop back into the stack head and serve as sets of turning vanes to give uniform flow over the register faces. The vertical deflecting vanes were adjusted to throw air toward the outside corner of each of the three rooms. The horizontal vanes were to be seasonally adjusted to throw cool air upward in the summer and warm air horizontally in the winter.

The northeast bedroom and the bath were fitted with perimeter wall registers to direct conditioned air upward in a blanket over the exposed walls in which the outlets are located. Return air from these rooms and others on the second floor has to flow to the hall and then down the stairs to the large grille in the lower hall. All doors were inspected to check whether or not there was sufficient space under them to allow air to return to the hall. It was necessary to increase the clearance of only one bedroom door where a rug blocked the original crack.

For the first floor Fig. 3 shows

two supply locations in the west inside wall of the living room, one in the east inside wall of the dining room and one in the north inside wall of the kitchen. These outlets may also be identified on Fig. 1.

Air Pattern Blankets Cold Walls

Inasmuch as the owner specifically mentioned his heating problem in the living room, the dealer had no trouble in selling his proposed changes as shown in Fig. 1. He pointed out why the original supply locations could not serve adequately, showing how circulation of air in the room from the original locations to the hall return grille aggravated the natural cold down drafts from the east wall.

Using a diagram such as Fig. 1, the dealer explained to the owner how perimeter wall registers, centered on the east and north walls as shown, would blanket the walls with warm air to counteract down drafts and eliminate the cold wall effect. The south wall of the living room was not so important as the north wall with respect to furniture and comfort, so no air was introduced at this end of the room.

With the original duct arrangement no air was introduced directly into the entrance hall to offset infiltration and heat loss at the front

door. To improve this situation, the dealer cut into the stack head which was no longer needed at the north end of the living room and put a register on the hall side. This register is similar to those used in the bedrooms with inside wall locations. Its vanes were set to throw some air back toward the rear door so it would not all short circuit to the return grille.

The owner had no particular complaint about distribution from the original outlet in the east wall in the dining room. It was agreed, however, that because of the furniture arrangement, no one was ever seated near the exposed walls, and for that reason, did not experience the uncomfortable effect which existed in the living room. The dealer was able to sell the owner on the two new dining room supply locations shown in Fig. 1 as a worthwhile improvement that would add little to the overall cost. The registers selected were the same perimeter wall type used in the other outside wall locations. They were centered in the north and west walls to throw a blanket of warm air upward over each wall. This pattern is equally satisfactory for both warm and cool air and no seasonal adjustment, except perhaps in volume, need be made.

The existing stack head in the dining room was connected into the return duct to provide a direct return instead of depending on the rather lengthy flow path through the door and hall to the central return grille.

Basement Space Increased

Fig. 4 shows a basement plan of the new duct system. Comparison with Fig. 3 reveals how the dealer was able to tie the new ducts to the existing boots and to risers for the five new outlets on the first floor. The new duct system is, of course, all above head level and makes the basement much neater and more usable than it had been with the old arrangement.

Table 1 shows the more important figures used by the dealer for this job. The amount of air to be cir-

culated was calculated initially from the total cooling load for the insulated house as shown in column 3. At the rate of 0.0333 cfm per Btuh (400 cfm per ton), the required amount of air is 680 cfm. To meet the 20,455 Btuh cooling requirement shown in column 3, the dealer selected a water cooled 2 ton package unit built into a common cabinet with a furnace. Since this unit has a rated air capacity of 800 cfm, the dealer decided to base his design on this full amount of air. The reapportionment using the larger cfm is shown in column 5.

As a further check on the room by room assignment of air quantities, the dealer apportioned the 800 cfm to each room on the basis of the individual heating requirements. Column 8 is the result. It was checked against column 5 since the duct and distribution system was designed for the maximum flow required by each room. Note that for some rooms this occurs in the winter and for other rooms in the summer.

Several additional checks were made. For instance, 800 cfm would satisfy the internal sensible cooling requirement with a temperature rise of 16.3 F ($14,107/1.08 \times 800 = 16.3$). Thus, if the house is to be held at 80 F on a design day (95 F outside), air would have to enter the rooms at 80 — 16.3, or 63.7 F, which is reasonable.

Volume Damper Reduces Flow

A corresponding calculation was made for heating duty. Thus, to hold 70 F inside on a design day (zero F

outside) it would be necessary for the air to enter each room at 105 F ($70 + [30,260/1.08 \times 800] = 105$ F). Experience could show that 105 F is too low on very cold days. In order to increase this temperature the dealer provided a volume damper in the supply duct for reducing the total flow in the winter. The owner, then, may use this damper for adjusting the total flow to meet seasonal requirements, and he may use the registers in each room to make the necessary seasonal reapportionments.

The system was designed to admit outdoor air directly to the air conditioner to offset normal infiltration. The outdoor air quantity represents about one change per hour for the first and second floors and amounts to about 188 cfm.

Load Figures Are Satisfactory

The house has about 1250 sq ft of floor space and with its 9 ft ceilings contains about 11,250 cu ft. Based on the calculated cooling loads there are about 735 sq ft per ton for the house with insulation and 535 sq ft per ton for the house without insulation. Based on the actual equipment selected (the 2 ton unit) the number of square feet per ton is 625. These figures are within the expected range for a home in the north central part of the country.

As a final check it was determined that the 800 cfm represents an air change in the house every 14.1 minutes which is again within the acceptable limits for air motion in the

What Is 'Air Conditioning'?

The American Society of Heating and Air-Conditioning Engineers defines air conditioning as follows:

"The simultaneous control of all, or at least the first three, of the following factors affecting both the physical and chemical conditions of the atmosphere within a structure: temperature, humidity, motion, distribution, pressure, dust, bacteria, odors, toxic gases, and ionization."

Reference: Heating, Ventilating, Air Conditioning Guide 1955, page 1. Published by the American Society of Heating and Air-Conditioning Engineers, New York.

conditioned space.

The owner has had a full year of experience with his new system. The dealer made sure there was complete satisfaction by giving careful attention to balancing the system during both the heating and cooling seasons. The settings of registers and dampers were carefully marked and recorded so that the owner would have no difficulty in making future changes himself.

The system is controlled by a combination thermostat which has a built-in manual changeover switch. The dealer provided the owner with normal yearly maintenance instructions which include advice on lubrication, filter renewal and attention to the cooling tower.

Humidity Control Brought to Builders' Attention

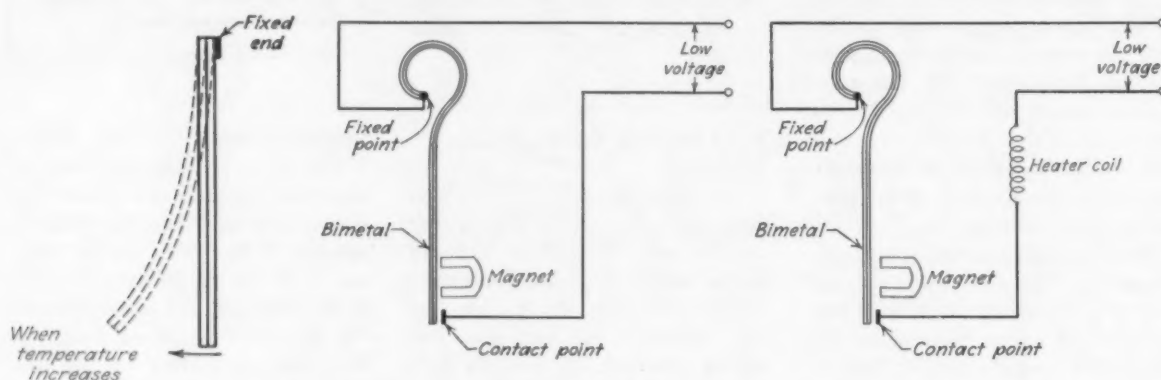
THE IMPORTANCE of good ventilation and the proper methods of obtaining it are being emphasized by the National Association of Home Builders in a series of notices to their membership. The relationship of the heating system in providing the right kind of ventilation and how it influences the humidity within a house is brought out. The notices are being written by Laurence Shuman, consulting engineer. Mr. Shuman says, "Special provision for allowing fresh air to enter the house is comparatively recent in house design. However, modern construction techniques result in more tightly built houses

of comparatively small volume, the effect of which is a drastically reduced infiltration of outside air. This is desirable in many respects, but the accompanying one-half to one quarter air change per hour is insufficient to provide the quantity of outside air needed for combustion and odor removal."

In addition to the combustion aspects pointed out, the removal of moisture from closets, attic, basements and crawl spaces is a by product of the introduction of comparatively dry outside air with the result that condensation becomes less of a problem.

Room Thermostat — What Can It Do?

An understanding of the factors which have affected room air thermostat design will help the dealer appreciate the properties as well as the limitations of thermostatic controls



1 BASIC BIMETAL element has free end which moves in response to temperature changes to make or break electrical circuit

2 ADDITION OF MAGNET brought clean break of circuit by the bimetal strip but created a new problem — magnet's pull could be overcome only by greater temperature changes, and the instrument's sensitivity was decreased

3 HEATER COIL was added to improve sensitivity. When coil provided sufficient heat to bimetal strip to overcome magnet's pull, burner was started and stopped at proper intervals to maintain comfortable room temperatures

By **S. Konzo and H. D. Bareither**
University of Illinois

IN THE PREVIOUS issue, some standards were proposed for room air temperatures under these general headings: 1) Control of Room Air Temperatures; 2) Temperature Balance Between Rooms; 3) Temperature Uniformity in Living Room.

Before proceeding with Standards 4 and 5 concerning temperature differentials in the rooms, let's investigate the interesting story of the development of room temperature control equipment. In our opinion the largest single development in domestic heating during the past 30 years has been that of automatic control equipment.

A bimetal element is comprised of two strips of different metals bonded together; one metal has a much

larger expansion rate than the other when exposed to a temperature change. If one end of the bimetal element is fixed and the other end is free to move, when the bimetal temperature is changed the free end will move in one direction or the other, depending on whether the temperature is increased or decreased (See Fig 1). The first thermostats were essentially a single piece of straight bimetal, fixed at the upper end and permitted to move at the bottom. With the addition of an electrical contact at the bottom, the bimetal element served as a simple make-and-break switch for the electrical current.

The original thermostats were long and conspicuous devices. In the case of a bimetal strip, the deflection of

the free end is affected by the length of the bimetal strip. Hence, if the two dissimilar metals do not have sharply contrasting rates of expansion, a reasonable deflection can be secured only by the use of a long bimetal strip. During the years, several improvements were made that shortened the length of the room thermostat. These changes involved: 1) the use of invar as the non-expanding part of the bimetal element and brass as the expanding part; 2) the use of a coiled bimetal element to preserve the total length but reduce the space occupied by the instrument; 3) development of a well-ventilated case to make the room thermostat respond rapidly to changes in room temperature.

Even with a low voltage (20-24 volt) circuit, a small spark was produced every time the thermostat contact was broken. In time this factor caused a pitting of the points and faulty contacts. In addition, the thermostat was so sensitive that it responded not only to small changes in temperature, but also to the least vibration from slamming doors and nearby street traffic.

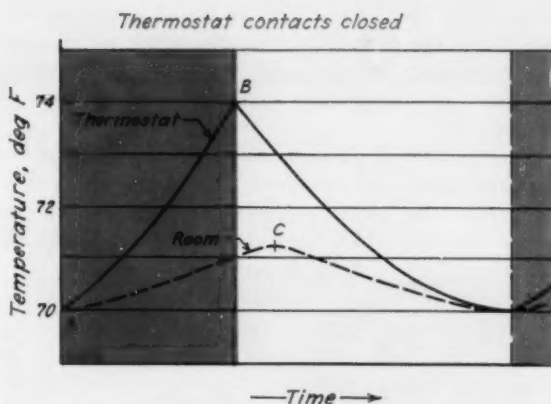
Magnet Solves a Problem

One of the important advances in thermostat construction came with the use of a small magnet to cause the bimetal strip to make a clean sharp break when the circuit was opened (see Fig. 2). When the contact was made and the bimetal element tended to pull apart, a force sufficient to overcome the pull of the magnet had to be generated by a temperature change. Conversely, the movement of the bimetal strip to close the electrical contact was aided by the pull of the magnet, so that as soon as the bimetal strip came within the influence of the magnet the contact was made sharply and without sparking. The magnet force was also strong enough to prevent a jiggling of the contacts with each little vibration.

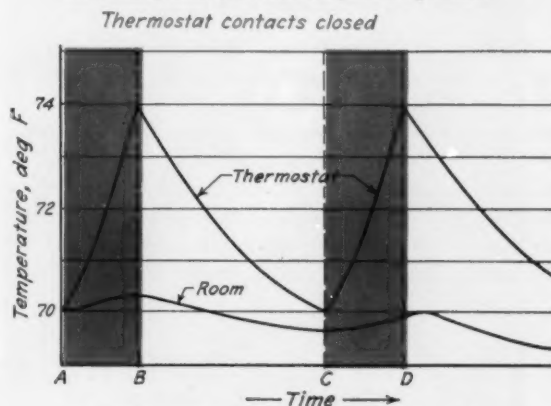
Unfortunately, in overcoming one difficulty another was added, since the magnet made the thermostat less sensitive to temperature changes. For example, where a 2 deg change in temperature caused a movement of the bimetal strip without the magnet, a much greater change was required when the magnet was added.

Heater Coil Is Added

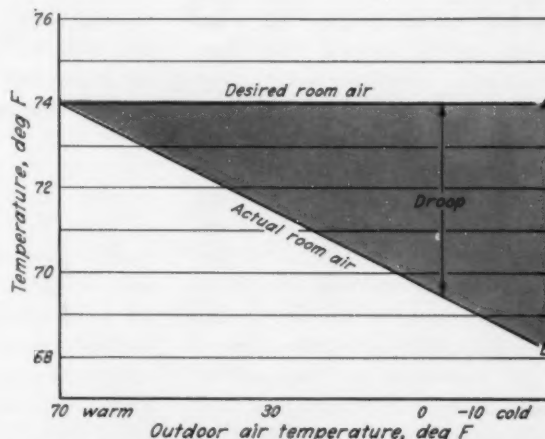
The next important advance in thermostat construction was the addition of a heater coil inside the thermostat casing, as indicated in Fig. 3. The purpose of the heater coil was to supply internal heat to the thermostat so the instrument would warm up at a faster rate than would the surrounding room air. For example, as shown in Fig. 4, when the thermostat contact was made the temperature of the thermostat rose from point A to point B, whereas the room air temperature had barely changed from point A to point C. Conversely, when the thermostat temperature had attained point B and the thermostat contacts had opened, the instrument started to cool rapidly, whereas the room air temperature decreased at a much



4 STEEP THERMOSTAT TEMPERATURE curves produce more even curves for room air temperature. Use of heater coil causes thermostat temperature to vary rapidly enough to maintain most nearly balanced room temperature possible



5 OVERSIZED HEATER COIL causes short burner cycles which satisfy the thermostat itself but are not long enough to maintain satisfactory room air temperatures



6 TEMPERATURE DROOP (shaded area) occurs when room air temperature drops far below desired value as burner continues to respond in short cycles to thermostat which is heated by too-large coil

slower rate. The net result of the use of the heater coil was that although the range of temperature variation of the thermostat was from point *A* to point *B*, the range of room air temperature variation was considerably smaller.

Hence, the circle was completed as far as room air temperature control was concerned. That is, the arcing that occurred at the contact points was stopped by the use of the magnets, which gave rise to larger temperature variations. This condition in turn was overcome by adding a heater coil to the instrument. Hence, through a series of small additions to the thermostat we had practically gotten back to the point where we started, except that now we had a more rugged — yet sensitive — instrument. The only drawback was that for a given setting of the thermostat a constant room air temperature was not maintained for all weather conditions.

Thermostat Droop Is Caused by Heater

The best way of explaining "thermostat droop" is to describe the operation of a room thermostat when an oversized heater is used inside the thermostat. Suppose this heater had such excess capacity that the temperature of the room thermostat was raised to the upper limit of the temperature setting within just 20 seconds. Note that the temperature which has changed is not the room air temperature, but only the inside temperature of the thermostat. The burner would operate the full 20 sec-

onds, and the room air temperatures would show little change because the register air temperature would barely have started upward. After this 20 second period the register air would tend to cool; so would the room air temperature, but probably only a small fraction of one degree. This condition is illustrated in Fig. 5. During the longer cooling period of the thermostat from time *B* to time *C*, the room air temperature would drop below the desired level. During the succeeding cycles of thermostat operation, room air temperatures would drop still further toward a level below the desired setting value. During this time, however, the temperature of the room thermostat is maintained between two temperature limits other than those of the room air.

In other words, an oversized heater coil would cause the room air temperature to drop far below the desired value, especially in cold weather. This is indicated in Fig. 6 by curve *B*. The difference between curves *A* and *B* is called the "temperature droop." If smaller capacity heater coils are used the droop would not be as large as that shown in Fig. 6. On the other hand, if the capacity of the heater coil is made too small, we will not obtain the desired sensitivity shown in Fig. 4. Hence, as long as some amount of internal heat is released within the thermostat casing by a heater coil, some amount of droop action will be obtained.

This subject of temperature droop and methods for overcoming it will be taken up in detail in next month's article.

Apprentices to Vie for Honors in Annual Contest

THE NATIONAL Joint Sheet Metal Workers Apprenticeship Committee reports that its 1956 apprenticeship contest, conducted under the sponsorship of the National Sheet Metal Contractors Association and the Sheet Metal Workers' International Association, is now in full swing. The contest began on February 1, will close March 15. It is open to first and second year apprentices. All apprentices who have not completed two years and not more than 4000 hours of apprenticeship training before March 15, 1956 are eligible to enter.

All contestants are requested to make their entries through their local joint apprenticeship committees by sending their names and addresses and the names and addresses of their employers to the local joint apprenticeship committee as soon as possible.

Applications for entry forms should be made by local joint apprenticeship committees to the secretary of the National committee, Joseph J. Kaberlein, 5911 N. Mobile Ave., Chicago 30. In localities where there is only a small number of apprentices and where there is no joint apprenticeship committee, the apprentices who wish to enter the contest may select one or more local contractors and an equal number of journeymen, preferably officers of the local union, who will act as a committee for conducting the local contest and for selecting the entry for the national contest. Each local committee must mail the actual fitting made by the local winning contestant to Secretary Kaberlein not later than March 15. The winners for the various localities will then compete for the grand national

prize awards. Among the prizes offered will be an engraved plaque bearing the name of the first place winner. Second and third place winners will receive similar plaques. Each winner and those given honorable mention will receive a certificate of recognition.

Prizes will be awarded at the annual convention of the Sheet Metal Contractors National Association on May 11 in Washington, D.C. Presentation will be made by William F. Patterson, Director, Federal Bureau of Apprenticeship, who has worked closely with the Joint Apprenticeship committee in selecting the pattern problem. Drawings of the pattern problem are available from the secretary of the Joint Apprenticeship Committee and are mailed upon receipt of requests for entry application forms.

FRANK P. KEENEY

Publisher of American Artisan

FRANK P. KEENEY, chairman of the board of Keeney Publishing Co., the publisher of American Artisan, died January 9 at the age of 78 in his apartment at South Shore Country Club, Chicago. Funeral services were held at Tecumseh, Mich., where he was born on November 4, 1877.

Mr. Keeney's business life was spent in business paper publishing, starting in 1899. Although not always in good health in recent months, he maintained his interest and activity in his work until the day of his death.

Mr. Keeney had been president of Engineering Publications, Chicago, for some years when, in 1933, the Keeney Publishing Co. was founded. All of the stockholders and all of the officers of the Keeney Publishing Co. were associated with Mr. Keeney at the time the company was founded and have been so continuously since 1933. The loss of his wise counsel will be felt particularly by them and his other business associates over the coming years. The company that bears his name will continue his ideals under the direction and ownership of this group.

Mr. Keeney was well-known and well-liked in business paper publishing circles, in which he was a leader. Among his many publishing activities, he had served as a director of the Audit Bureau of Circulations from 1941 to 1945.

He was equally known and liked in the fields served by the Keeney Publishing Co.'s magazines. A life member of the American Society of Heating and Air-Conditioning Engineers, there were — until recent years — few national ASHAE meetings that he missed. He was an active member, too, of the Society's Illinois chapter.

In the years prior to World War II, Mr. and



Mrs. Keeney travelled widely, visiting Europe, South America, Japan, Egypt and many parts of North America. They spent a good part of recent winters in Florida, and were looking forward to doing so again this year.

Mr. Keeney was a member of South Shore Country Club, Chicago, where he had maintained his home for many years; he was also a member of the Chicago Athletic Association.

Although his career was a long one and a successful one, the deep sense of loss and sorrow felt by his friends and his associates is not lessened thereby.

November 4, 1877 — January 9, 1956



Personal Touch Spells Success in Dealer's Direct Mail Program

**Keeping in touch with his old customers through
personally written letters and reference lists has paid off
in sales records for a dealer with a fresh approach**

DIRECT MAIL, when handled properly, can be the most potent force available to a heating dealer in building his business, according to Hans Jensen, president of Hans Jensen & Sons of Chicago.

He spends from \$8000 to \$10,000 per year on his mailings, which constitute the bulk of his advertising. His mailing list has 8000 names and they all get a "Hans' Healthy Heat" letter six to eight times a year.

What good does it do? The firm's gross sales in 1946 were \$250,000. In 1948 they started the mailings and business has climbed steadily each year since. Now they are practically the company's only sales promotional activity, and its 1955 gross was over \$800,000.

Mr. Jensen switched his advertising money to direct mail, except for the telephone book and miscellaneous advertising, after completing a survey of the sources of his business. Over a period of a year he marked each sales slip with the source that sent that particular customer to him, then checked them. He found that 80 percent of his sales either were repeat sales to old cus-

tomers or were to people recommended to him by old customers. The other 20 percent came mostly from the phone book, and 2 percent came from newspaper advertising. To him this meant that the phone book was his most effective advertising medium and that he had to devise some means to reach his old customers steadily, to stay in touch with them on a personal, friendly basis.

Letters Maintain Contact

He immediately dismissed the usual practice of sending literature out with the statements because it reached only the customers with current accounts and he felt it was too mechanical and too distant. His concept is that all customers of the past five years are current and therefore should be contacted on a regular basis, and that the contact should be in the form of a friendly, personal "visit." The letters he sent, he decided, must show the customer friend that his firm thought enough of him to spend time and effort on the letters. They should, he



SALES CLINCHER after prospect has been contacted is "Who's Who" reference list containing hundreds of names of customers which is kept current by dealer Hans Jensen (right) and son Eric



MAILING LIST CARDS occupy entire wall in mail room. Letters go to 8000 customers of the past five years with each mailing.

decided, make a point and then close without a high pressure pitch, but with the reminder that this was the Hans Jensen who offered them "Hans' Healthy Heat."

He decided to enclose a reply postcard listing his many services, with an invitation to check off whatever the prospects were interested in and drop it in the mailbox. This card was the extent of his "hard sell." Remembering that many of his prospects came to him on the recommendation of old customers, he decided to close each letter with the suggestion that if the customer was not interested at the moment, he pass the card on to a friend.

Most Important Ingredient

Mr. Jensen writes the letters himself, and sketches the illustrative material he wants. "Many an ad agency man has argued with me," he says, "about my writing the letters. They all feel it should be done professionally. But I feel these letters must represent a visit to my friends. No one else can make your visits for you. I want to give them my ideas in the way that I express them. If I didn't write them, the personal touch would be lost. I feel the personal touch is the most important ingredient in the success of these letters."

The time they are written is important, too, Mr. Jensen says. Doing \$800,000 worth of business in a year he has little time to sit down and write letters to customers during working hours or after he gets home. "There's just one way I can do it," he says. "Each year I take a vacation and go south in the middle of the winter. I spend two weeks resting and thinking. Then I spend two more weeks writing all the letters for the next year. But I don't start cold. All through the year I jot down ideas I get for letters. My reams of notes might include old envelopes, paper napkins, statements, invoices, bills of lading — anything I happen across that might add something to my message. But I do have a lot of thought provokers to start me off, and I need them because the job has to be

done while my mind is free to concentrate."

When he gets back, he presents the letters to his printer, together with sketches showing the artwork to be done, and how the artwork is to be placed on the page. Each letter also has its own envelope with appropriate artwork. The printer takes over from there, and Jensen gets the letters back in boxes, printed and ready to be inserted into the envelopes for mailing.

Mailings Are Staggered

The letters don't go out at regular intervals because he doesn't want them to be expected. One year a letter might go out for Christmas, the next year just after New Year's Day. One year it might be for St. Patrick's Day, and the next for Valentine's Day. One year he'll send one out for Mother's Day, the next year for Father's Day.

The payoff, according to Mr. Jensen, is reflected in the rising sales curve. He doesn't bother to count the cards that come in, although they do come in sometimes by the dozen. At times they will come in months after the mailing. The phone rings all the time, too — a potential customer might have decided to call instead of mailing the card. He treats them all alike — as though they had just received the letter and were calling in response to it, or in response to the recommendation of a friend who had just received a letter.

Once an interview is arranged with a prospect, however, Mr. Jensen begins another phase which is a part of his campaign — the use of his "Who's Who," a typewritten list of several hundred customers. One list is arranged alphabetically, another by neighborhood, another by type of fuel used. With it he can show his new prospect names of people he can talk to about Jensen's. These lists show hundreds of names — and they are kept current — to avoid the impression that he has selected just a certain few who will give the best references. The Who's Who, then, is the clincher after the letters have opened the door and started the sales process.



● This is another in a regularly-scheduled group of articles appearing in American Artisan under the general heading " 'TRAINING PROGRAM' . . IN PRINT." These articles are especially prepared to help dealers in developing know-how in all phases of their organizations. Previous articles have dealt with electrical problems as they affect the dealer's air conditioning installations and with various management techniques developed to attain the best possible operating conditions. This month we turn to an observation of an actual heat pump installation in which humidity is controlled by a bypass arrangement.

Reheat System Controls Humidity In Heat Pump Installation

*... when cooling is not required. By
utilizing condenser heat and a bypass system,
a portion of the air is warmed
and returned to the distribution system*

By Glydewell Burdick

ALL TOO OFTEN it is assumed that the heat pump as a year 'round air conditioner is restricted to geographical locations where mild winters are experienced. However, a lot of experimental work has been performed by public utilities in order to improve the application of heat pumps in cold climates. The quality of the engineering is a controlling factor.

A report on such an application was published in *American Artisan* in December 1954 and January 1955. These articles gave the data for a heat pump located near Madison, Wis. Climatic factors, operating costs, indoor temperatures maintained and other essentials were reported for the heating and cooling requirements for the period Oct. 1, 1953 to July 31, 1954.

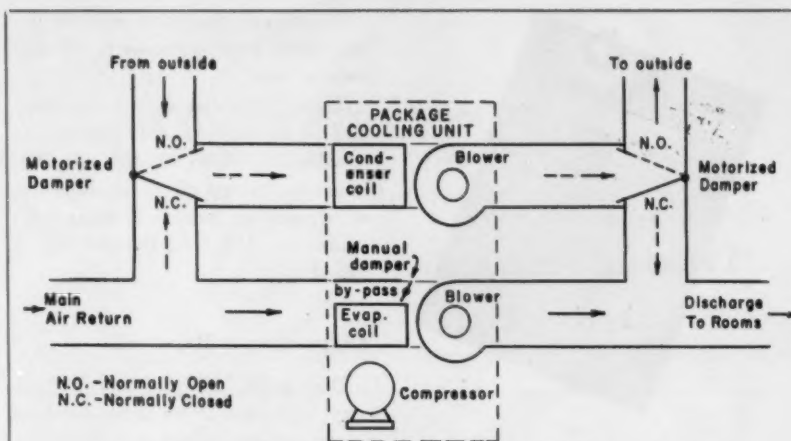
Summer Inadequacies Noted

As described in the January 1955 *American Artisan*, the quality of summer air conditioning afforded during the first summer left much to be desired from the viewpoint of the user. Like conventional air cooling equipment, the heat pump brought welcome relief for the hot hours of the hot days, but helped very little when outside temperature dropped below 80 F with the humidity well up. It helped not at all below 75 F, which is the usual night condition. The common complaint was that the air was either clammy or sticky, depending on the thermostat setting.

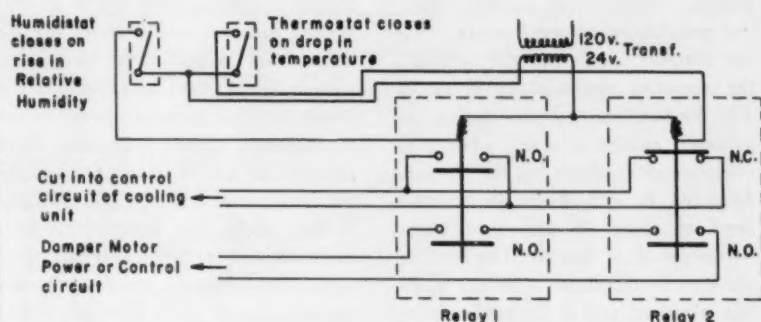
Obviously, the cause was the loss of humidity control during the night, and other hours when air cooling was not needed but dehumidification was essential.

Reducing the thermostat setting was not a good solution, although perhaps it helped a little through slightly increasing the percentage of time that the cooling coil was operating.

A humidistat was used with the cooling thermostat so that the cooling coil would operate whenever required for either humidity control or temperature control. Then, under control of a heating thermostat, condenser heat was returned to the con-



1 AIR DUCT AND DAMPER arrangement provides humidity control by reheat to air-to-air cooling unit



2 CONTROLS ARE WIRED so outside air is circulated through condenser when cooling thermostat is closed

ditioned space whenever necessary to maintain room temperature.

To increase duct air temperature to a comfortable level (minimum 67 F) the blower was slowed about 25 percent, and the percentage of total air bypassed was increased. This also brought the air coil operating time up to more than 67 percent of the time that air conditioning was used.

Did the occupants like the results? Yes, they did. Summer comfort reached the same high standard of quality which had been attained for winter heating. It was comfortable and pleasant in the house 24 hours a day, regardless of the outdoor temperature or humidity. Primarily the improvement was the result of reheat for humidity control.

The system should have sufficient capacity and be equipped to maintain the temperature of the occupied space

between 74 and 78 F and the relative humidity at or below 50 percent over the range of outdoor temperatures from 65 to 100 F, and at an outdoor absolute humidity of up to 100 grains of water vapor per lb of dry air. In order to do this, and do it with real comfort to the occupants, it must:

1) Maintain air circulation 100 percent of the time, preferably without passing air over a cooling coil when the compressor is off. (Otherwise, the circulated air picks up moisture from the dripping wet coil, returning it to the house air and raising the humidity.)

2) Cool and dehumidify. It must put dry air into the occupied space at from 72 F to no lower than 67 F. If lower air temperatures are used, there may be cold drafts even with efficient and well placed diffusers.



3) Cool, dehumidify and reheat. That is, act as a giant dehumidifier, keeping control of the humidity without reducing room temperature below the comfort level (put dry air into the occupied space at 70 F to 75 F). We have many hours during the summer, usually at night, when it is cool enough outdoors but the absolute humidity is well above the comfort level of about 65 grains of water vapor per lb of dry air. The outdoor air may be too moist to permit opening windows, and if the system is incapable of operating as a straight dehumidifier the inside humidity will build up to an uncomfortable level if the house is kept closed.

4) Introduce sufficient fresh air supply at all times, and vent the house air to the outside from such points as the kitchen and bathrooms. The rest of the house must be tight.

5) Preferably remove internal heat almost constantly, at a varying rate, approximating the total heat gain of the house, recognizing both sensible and latent heat gain. A system employing heat storage can readily meet this requirement. If it is a direct delivery system, it may use more than one compressor, be of two stage operation, or use a single compressor with variable speed control. The intermittent action of an "all-or-nothing" system, which is unavoidable except at the maximum heat gain condition, is considered undesirable. If such a system is used, it should be materially undersized so that it will be in operation most of the time.

6) Restrict the noise level in living rooms and bedrooms to 40 decibels or less.

These requirements are summarized in the ASHAE definition of air conditioning which requires as a minimum the control of temperature, humidity and air motion. Provide these around-the-clock and the problem is solved.

Evaporator Is Bypassed

Duct work, dampers and controls may be added to an air-to-air heat pump system to achieve humidity control through use of the reheat principle as indicated in Fig. 1. Control wiring, using a heating thermostat, is diagrammed in Fig. 2. Motorized dampers would direct the air flow across the part of the heat pump system being used to condition the inside air. For summer operation the arrangement shown is normal. Here the outside air is drawn across the condenser coils and again discharged to the outside. The dampers are normally closed to the inside air duct system directing the inside air across the evaporator coils with a portion being bypassed around the evaporator. (This volume is determined by a manually adjusted damper.)

When cooling and dehumidification is required, the compressor is

operated and the inside air is passed through the normal air passage (part of the air going through the evaporator and the remainder being bypassed around the evaporator). When the room thermostat is opened, outside air is circulated through the condenser, whether the humidistat is opened or closed (Fig. 2).

Reheat Maintains Low Humidity

When the heating thermostat is closed and the humidistat is closed, room air is passed through the condenser circuit because the motorized dampers will close off the outside air intake and discharge openings. The compressor operates and air is drawn across the evaporator at a lower rate when the dampers are in this position.

The main objection to operating the air conditioner at a time when the inside temperature is satisfactory is the lowering of the inside air temperature. This situation is taken care of by the condenser. This heated air is returned to the main distribution system where it mixes with and warms the dehumidified cooled air that passed over the evaporator coils. This is the reheat principle. Through this method we are able to maintain a satisfactory internal humidity at times when cooling is not required.

The cycle of operation for the equipment involved is explained in Table 1.

WHAT'S YOUR PROBLEM?

The American Artisan's 'TRAINING PROGRAM' — IN PRINT will explain the whys and wherefores of some of the dealer's problems, tell what to do about them. You will want the members of your organization to study these articles carefully, keep them for future reference . . . If you have a problem you'd like to see covered, write Clyde M. Barnes, Editor, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

Long Range Advantages, Too

My wife places emphasis on some of the side benefits of humidity control, which from her viewpoint have economic as well as aesthetic and comfort advantages. These benefits include elimination of mold damage to leather goods, bedding, upholstered furniture, and fabrics in general. Packaged foods keep better. The housewife has less work. Musty odors are eliminated. Swelling of furniture and woodwork is avoided. Sweating of toilet tanks and piping, which cause extra work if not damage, is eliminated. Fly, bug (especially the tiny bugs that crawl through wire screens), and dust troubles are re-

“... air conditioning with humidity control through a reheat system proved about three times as useful as it was for cooling when dehumidification was only a by product.”

duced or eliminated. It provides an easy cure for neighborhood noise. We want the house open during all pleasant weather, but if there is any need for keeping it closed, we can do so without any sacrifice of comfort.

It surely is pleasant to crawl between sheets that are cool and dry. In the morning it is just as pleasant, and far more important to the family, for everyone to wake up refreshed. Part time humidity control does not and cannot do that job.

It would have been easier to compare 1955 with 1954 summer results if temperature conditions had been more nearly equal. But note in Table 1 that the total daily absolute humidity excess (ahe in the table) was almost the same for the two summers. Comparing half-month periods, there was good correlation of power use per ahe in 1955, and poor correlation on the dde (degree day excess) basis. This indicates that when humidity is controlled, cooling becomes the by product; also that the hours of compressor operation and power usage will depend mainly on the absolute humidity excess over the comfort level, and that temperature excess will have little effect. This could be quite different for a climate generally dry and hot.

During both summers the system was in use and the house was kept closed whenever there was any benefit from doing so. It did little work in 1954 between midnight and 9 a.m. With reheat for humidity control in 1955, and based on energy use per ahe, it was 1.12/0.41 or 2.73 times as useful as it was in 1954. If we use compressor hours per ahe as the measure, it was 0.155/0.062 or 2.50 times as useful. This ignores the fact that in 1954 there was some ex-

TABLE 1—CYCLE OF OPERATION for equipment involved is based on arrangement of equipment as shown in Fig. 1

Relation of Room Temperature to Control Point	Relation of Room Humidity to Control Point	Room Thermostat	Room Humidistat	Compressor and Fan* Operation	House Air Passing Through Condenser
Below	Above	Closed	Closed	On	Yes
Below	Below	Closed	Open	Off	No
Above	Below	Open	Open	On	No
Above	Above	Open	Closed	On	No

*Fan in evaporator air circuit may be run continuously (manual switch) to maintain continuous circulation of house air.

TABLE 2—BEFORE-AND-AFTER case study gives operating data with and without humidity control for a heat pump system

	1954* June 11-Sept. 7	1955** June 1-Aug. 31	July 1954	July 1955
Degree day excess of mean temperature above 70 F (dde)	270	416	121	258
Absolute humidity excess (ahe) (sum of daily excess over 65 grains per lb of air)	1644	1653	655	1071
Energy used, kwh				
For cooling and dehumidification	620	1715	339	1020
For cooling and dehumidification, per dde	2.30	4.12	2.80	3.95
For ventilation	50	131	25	54
Subtotal	670	1846	364	1074
Subtotal per dde	2.48	4.44	3.01	4.16
Subtotal per ahe	0.41	1.12	0.56	1.00
For straight heating	none	180	none	1
Total energy used	670	2026	364	1075
No. of days on which house was closed and cooling-dehumidification used	30	65	15	25
No. of hours in period		1848	744	744
No. of hours house was closed	NR	1500‡	NR	611
Hours of air coil operation	163	1035	96	598
Hours of air circulation	NR	1500‡	NR	611
Hours of reheat operation	†	771	†	290
Compressor hours, cooling and dehumidification only	102.51	257.26	55.77	151.71

*Omits vacation Aug. 20-30, 1954

**Omits vacation Aug. 1-15, 1955

†Reheat installed in May 1955. In 1954 some heat from other sources was tried out in a small way.

‡Includes some straight heating

perimental use of reheat. The figures include nothing for May and September, when there is also some use for dehumidification. So let's say that air conditioning with humidity control through a reheat system proved to be about three times as useful for this particular installation as it was for cooling when dehumidification was only a by product.

Comfort Is Relative

Whether we are comfortable or uncomfortable in a given environment is a relative matter, depending on the experience of the individual. Common experience and habits of

most people is to seek maximum comfort at night so they may sleep well and awaken in the morning feeling refreshed and ready for a day's work. Often occupants of an air conditioned home are more comfortable during the heat of the day when the cooling equipment is operating than they are from midnight on, when control of humidity has been lost because the temperature control shuts down the cooling equipment. I think most people who install central air cooling in Wisconsin (and no doubt many other areas) will quickly discover that shortcoming, and will want something better. I know that was our experience in 1954.



Expanded Market Presents Challenge to Good Salesmanship

... and the need for development of dealers' merchandising activities becomes evident. Here are some valuable tips on how to increase your sales volume through better presentation of your heating-cooling story

By Robert G. Mihan
Merchandising Consultant

MANY ARTICLES have been written covering the technical aspects of heating and cooling and much has been said about the presentation of heating and cooling to the home owner. But there is much more to say about merchandising, and it is our purpose in these articles not only to emphasize the need for improved selling techniques by dealers, but mainly to outline concrete sales methods for developing the dealer's sales volume.

Survey Proves Training Need

The need for improvement in selling techniques by dealers is borne out by a survey I made to determine how much effort was exerted in the estimating of heating jobs by dealers, both large and small.

Each of the 75 dealers or their salesmen to whom I talked in conducting the survey was presented the same prospective job. I informed each that I had just bought a small ranch style basementless home. I told him I wanted an estimate on a new warm air furnace to be installed in the utility room with ductwork in the attic space, and I sketched the floor plan, showing room sizes and other data. I told the dealers I would not hold them to their estimate until they had an opportunity to see my home, but I asked for an approximate price for the entire job. Here's what I found:

- 1) The range in estimates for the system, all including approximately the same size furnace, varied from \$700 to \$1200.
- 2) Few of the dealers made a real effort to emphasize the quality of the display equipment I examined.
- 3) During a week of contacts only two dealers asked me more than once

Better



THE AUTHOR, a widely travelled merchandising consultant, has a background in sales which qualifies him as an outstanding authority in merchandising. Mr. Mihan has served as director of sales training and sales manager for various large companies in the heating-air conditioning and related fields, and has conducted sales development programs for dealers across the country.

for my name and address. Virtually none of the dealers tried to persuade me to buy immediately. And only one dealer offered to drive out to my house to figure the job.

More Aggressive Selling Needed

I found myself almost begging some of these men to try to sell me a furnace. In two places I visited where the owner or manager was on vacation, office girls asked me to call back in two weeks. Certainly, these dealers needed a salesman to take over while they were absent — someone who would know how to sell me *now*.

The details and inferences uncovered in this and other surveys indicate a need for more aggressive selling by dealers in all parts of the country — planned merchandising which will promote business *at the right margin of profit*. Selling deficiencies are not confined to certain locations, nor are they confined to dealers alone; the manufacturer and the distributor can also increase sales volume if they improve their fundamental selling techniques.

What impression does your salesman make on the prospect? My con-

tacts with salesmen convince me that good professional selling is needed, and better training will equip salesmen to produce a sales volume far above that being realized now by many dealers. I find that many salesmen need either a full sales training program or a short refresher course in better selling.

Many dealers need advice in better methods of merchandising, and my surveys indicate that a large number of dealers allow sales to slip through their fingers because of a lack of know-how in professional selling.

Canvass For Leads

Prospects for heating and cooling are everywhere, and in future articles in this merchandising series, many ways of locating leads will be presented. For a long time I found it difficult to prove to heating-cooling dealers and distributors that prospects could be located easily. So I decided to take advantage of my heating sales training programs in various cities to prove my point. In each city during the afternoon preceding the training session I took a distributor or dealer with me and travelled to a section of the city where most of the

homes were about 25 years old. We visited one to six homes to obtain at least one lead for a new heating or heating and cooling system. At the meeting the following morning, I presented the prospect's name and address and asked if any of the dealers attending would like to follow up the lead. Most of those present said they would like the lead if I would give it to them, but only a few in each meeting could say they did any serious canvassing on their own. The inference here is clear — many of the dealers were overlooking a profitable and proved method of obtaining new business, yet they were very much interested in taking on new leads to increase their business volume. Actually, 50 percent of these leads ultimately resulted in sales.

There have been other examples of where to find new business. I have picked up the telephone and canvassed for leads in cities where I was completely unknown, and have experienced highly favorable response. Often I have found a prospect in a hotel clerk or bellboy in the hotels where we conducted our sales development programs.

We will discuss development of

Merchandising Through Better Selling

TRIED AND TRUE merchandising methods based on actual experiences by the author and by dealers he has interviewed will be presented regularly beginning this month as another **Artisan** feature, "Clinic for Advanced Salesmanship," designed to help dealers build sales volume with improved selling and promotion techniques. Comments and suggestions from dealers and their personnel will be welcomed by the author. Address correspondence to Robert G. Mihan, c/o Editorial Dept., **American Artisan**, 6 N. Michigan Ave., Chicago. Future articles will tell how to:

- 1 Locate good retail salesmen
- 2 Screen salesmen to find the one who will do the best job for you
- 3 Train new salesmen
- 4 Improve salesmen's techniques
- 5 Develop part time salesmen into full time salesmen
- 6 Develop sales personality
- 7 Sell advantages, comforts and conveniences through potential ownership of heating and cooling equipment
- 8 Develop more sales through consumer financing
- 9 Take advantage of the assistance available from distributor salesmen
- 10 Develop a prospect follow-up system
- 11 Sell the modernization market
- 12 Stress quality components and justify the price of the equipment you sell
- 13 Develop and use visual aids to train retail salesmen
- 14 Develop and use selling tools to present your equipment to prospects
- 15 Develop professional salesmen and close the sale
- 16 Develop a sales crew

Clinic for Advanced Salesmanship



sales leads in future articles in this series, but there is a point which must preface any discussion of selling: before we go out to sell or before we hire a salesman to go out and sell for us, we must be sure our showrooms and business operation are geared to sell the heating and cooling equipment we are presenting. We have to be sure we are ready to do the things that attracted the prospect and made it possible to sell the equipment to the prospect in the first place.

Another point we touched upon at the beginning of this article and which should be a first consideration in any sales training program is the importance of selling at the right margin of profit to the dealer.

Many successful heating-air conditioning dealers have found out the hard way that underpricing and overpricing in estimates prevent closing sales to prospects who shop for more than one estimate. It's not news to anyone that there are dealers who give away their profit because they feel they will be guaranteed the sale if the price is low enough; nor is it news that many of these men price themselves out of business, but not before they have left a blemish on the industry. On the other side of the picture is the dealer who overprices, expecting to close a fast deal with his prospect.

Good Selling Beats Competition

These are the people who can and do lose sales to ethical dealers who are able to prove to the prospect who seeks more than one bid that he will receive a quality product as well as future service for a price that is fair to both parties.

I wish all our dealers could hear some of the discussions I have had with dealers across the country about selling techniques and methods of merchandising heating and cooling equipment. Time after time, dealers have told me they very often get jobs in the face of price-cutting

competition, through aggressive selling which emphasizes quality equipment and service.

Must Sell Quality

Obviously, then, the key to better merchandising and to more sales at the right profit margin is better salesmanship. The dealer who can sell assurance that the prospect will get what he is paying for and that he is getting a quality job at a fair price will gain customer confidence, and it's impossible to overemphasize the importance of this confidence in building a reputation and the resulting sales increases.

This is an introduction to a series of articles in which we will discuss methods of screening prospects and of surveying and analyzing conditions, proper approaches to gain favorable attention, the health angle in selling residential air conditioning and many other phases of merchandising. A list of subjects to be covered appears on the opening pages of this article.

Inquiries and suggestions from dealers and their personnel will be welcomed. Address all correspondence relating to these subjects to Mr. Miham in care of the Artisan editorial offices.

Rapid Growth of One-Family Housing to Continue

THE TOTAL FIGURES on housing starts tend to obscure the rapid growth in single-family houses because of an offsetting decline in multi-family buildings, according to Dr. George Cline Smith, economist for the F. W. Dodge Corp. Reports for 1955 show that total contract awards for one-family houses reached 8.9 billion dollars — a gain of 21 percent over the previous record set in 1954, and an increase of 97 percent since 1951. This great growth of one-family housing is obscured in the figures for total housing units erected, which include those made available by multiple dwelling unit building such as apartments and apartment hotels. This total figure rose only 64 percent between 1951 and 1955.

The reason for the difference, according to Dr. Smith, is that over the same period contracts for apartment construction were reduced by nearly half, and two-family buildings also dropped substantially. "Virtually all of the residential increase between 1954 and 1955 was also in the one-family category," Dr. Smith pointed out,

"with contracts for multiple dwellings remaining practically stationary at the 1954 levels." He cited several factors which he felt explained the strong trend toward single-family homes. Among them are:

1. Prosperity and availability of credit.
2. The fact that in many areas it is cheaper to own than to rent, particularly when income tax deductions on mortgage interest and on local property taxes are taken into account.
3. Rapid growth in the proportion of old people in the population, since the over-65 group has the highest proportion of home ownership.
4. The baby boom, putting a premium on the "house-and-yard."
5. Renewed emphasis on home entertainment and hobbies, including home workshops, partly as a result of increasing leisure time.

Dr. Smith said he expected home building to continue at high levels for the next decade or longer.

Laying Out a Square to Four Round Fitting

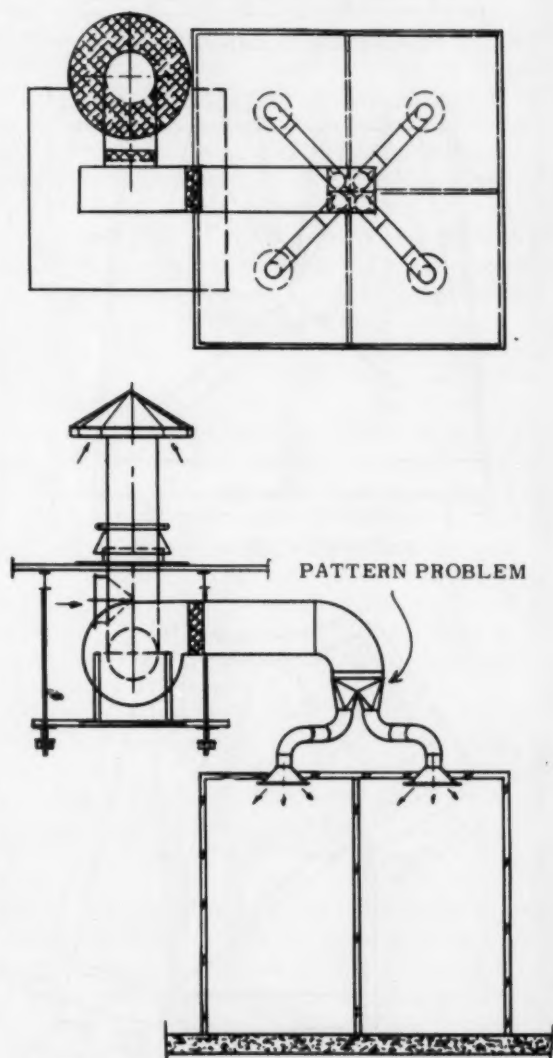
... as applied in this case to directing the discharge air from a square supply duct into four round ducts to ventilate separate offices through ceiling diffusers

SMALL OFFICES LOCATED in the centers of industrial buildings often present ventilating problems different from those of the surrounding spaces used for manufacturing processes. Air volumes directed into each small office must be free of obnoxious and disagreeable odors and must be discharged at a low enough velocity so occupants working at a desk do not notice movement of air. The air must also be discharged at a temperature that will provide a comfortable environment. This month's pattern problem describes the fitting necessary to divide the discharge air from a square supply duct into four equal round distributor ducts that feed individual offices through ceiling diffusers (Fig. 1.)

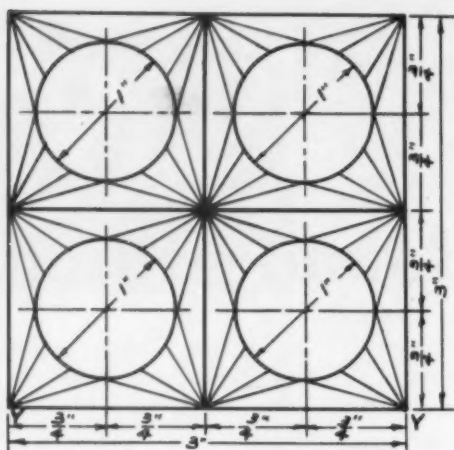
The supply air for this particular ventilating system was provided from outside the building through a stack installed on the roof. The outside air was tempered by a duct heater during cold weather. The square to four round fitting illustrated in Fig. 1 was the cheapest and most practical way to terminate the supply air.

In analyzing the pattern layout problem, note from the plan and front views that the fitting is symmetrical about the horizontal and vertical center lines. From this analysis, it is determined that all the true length lines necessary to develop the patterns can be worked from a half front view drawing.

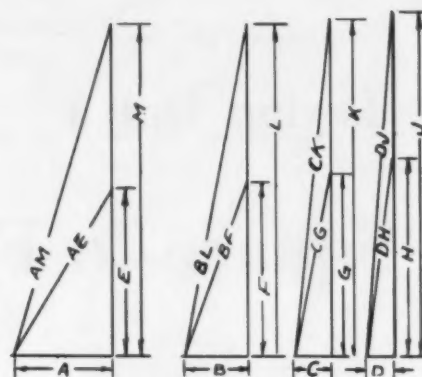
Figs. 2 and 3 are detailed views of the pattern problem and are used to develop Fig. 4.



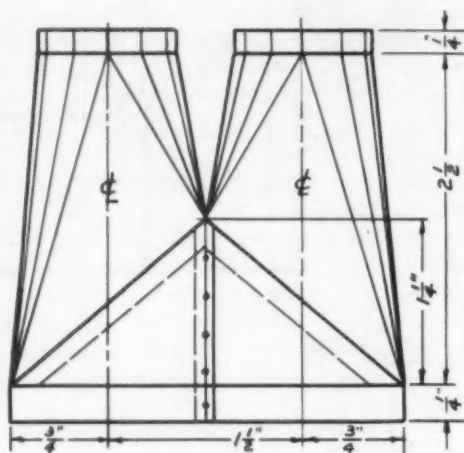
1 PLAN VIEW (top) demonstrates ventilating system arrangement for office areas. Elevation view shows how pattern problem is applied



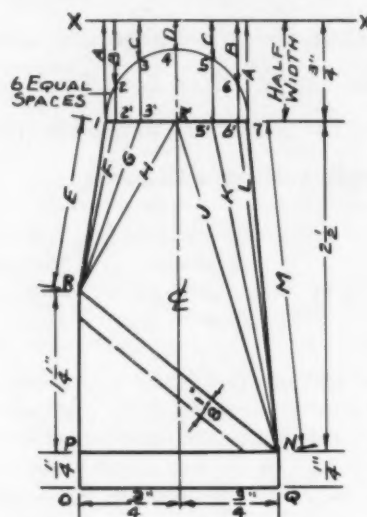
2 PLAN VIEW of pattern problem



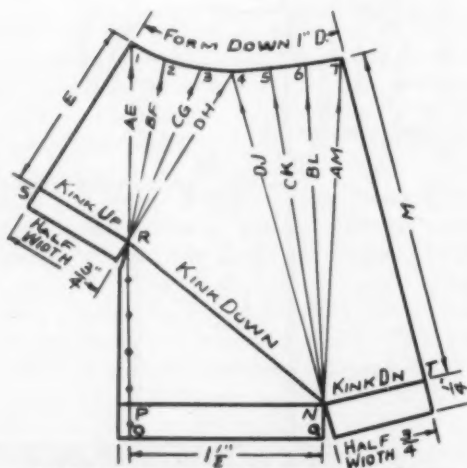
TRUE length lines



3 FRONT VIEW of fitting

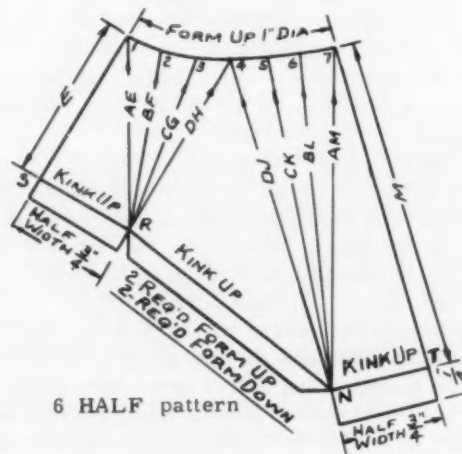


4 HALF FRONT view (simplified method)



2 REQ'D FORM UP 2 REQ'D FORM DOWN

5 HALF pattern



6 HALF pattern

The following is a step by step solution to the problem.

Half Front View, Fig. 4 —

a) Draw the $1\frac{1}{2}$ in. horizontal line OQ. From point O, measure $\frac{3}{4}$ in. and draw the vertical center line CL perpendicular to line OQ. From points O and Q draw lines above and perpendicular to line OQ; measure up each vertical line $\frac{1}{4}$ in., mark the points P and N and through the points draw the line PN. From point P measure up $1\frac{1}{4}$ in.; mark the point R. Draw a diagonal line between points R and N.

b) From line PN, measure up $2\frac{1}{2}$ in. on the center line and mark the point R'. Through this point draw a line perpendicular to and extending on both sides of the center line. With point R' as center and radius $\frac{1}{2}$ in., draw a half circle above this horizontal line. Where the half circle intersects the horizontal line, mark the points 1 and 7.

c) Divide the half circle into 6 equal spaces, and mark the points 2, 3, 4, 5, 6. On Fig. 2, measure the distance ($\frac{3}{4}$ in.) from line YY to the center line of either circle. Transfer this distance to the center line in Fig. 4, using point R' and measuring the distance above line 1-7. Draw a line through this point perpendicular to the center line, and mark the line XX. Through points 1, 2, 3, 4, 5, 6, and 7 draw lines perpendicular to and intersecting lines 1-7 and XX. Mark the distances from the equally spaced points on the half circle to line XX with the letters A, B, C, D, C, B, A as shown. Mark the intersection points on the diameter line 1-7 with the numbers 2', 3', 5' and 6'.

d) From point R, draw lines to points R', 3', 2' and 1. Mark the lines E, F, G and H. Draw lines from point N to points R', 5', 6' and 7. Mark the lines J, K, L and M.

To Lay Out the Pattern, Figs. 5 and 6 —

a) Draw the $1\frac{1}{2}$ in. horizontal line OQ. (Fig. 5). From points O and Q, draw lines perpendicular to line OQ. From point Q, measure up $\frac{1}{4}$ in. and mark the point N. From point O, measure up $\frac{1}{4}$ in. and mark the point P. From point P measure up the perpendicular line $1\frac{1}{4}$ in. and mark the point R. Draw the diagonal line RN. To the right of point N (about $3\frac{1}{2}$ in.) establish point N for Fig. 6. Transfer distance RN, (Fig. 5), to Fig. 6. Use the same angle (40 deg) so that lines RN (Fig. 5 and Fig. 6) are parallel and equal in length.

b) Draw a right angle. From Fig. 4, transfer line H to the vertical leg, and fall distance D to the horizontal leg. The hypotenuse line DH is the developed line. With points R, (Fig. 5 and Fig. 6) as centers, and radius DH, draw arcs above and to the right of points R.

c) Transfer line J and fall distance D from Fig. 4 to the vertical and horizontal legs of a right angle. The hypotenuse line DJ is the developed line. With points N, (Figs. 5 and 6) as centers, and radius DJ, draw arcs cutting arcs DH, and mark both points 4.

d) From Fig. 4, transfer line G to the vertical leg of

a right angle, and fall distance C to the horizontal leg. The hypotenuse line CG is the developed line. With points R, (Figs. 5 and 6) as centers, and radius CG, draw arcs to the left of point 4. With a compass, measure arc 4-3 on the half circle (Fig. 4), and with point 4, (Figs. 5 and 6) as center, cut the arcs CG, and mark the points 3.

e) Line K and fall distance C are transferred from Fig. 4 to the vertical and horizontal legs of a right angle. The hypotenuse line CK is the developed line. With points N (Figs. 5 and 6) as centers and radius CK, draw arcs to the right of point 4. Measure arc length 4-5, (Fig. 4) and with points 4, (Figs. 5 and 6) as centers, cut the arcs CK and mark the points 5.

f) The lines L and F are transferred from Fig. 4 to the vertical leg of a right angle, and fall distance B to the horizontal leg. The hypotenuse lines BF and BL are the developed lines. With points N, (Figs. 5 and 6) as centers, and radius BL, draw arcs to the right of points 5. Measure arc distance 5-6 on the half circle, (Fig. 4), and with points 5, (Figs. 5 and 6) as centers, cut the arcs BL and mark the points 6. With developed line BF as radius and points R (Figs. 5 and 6) as centers, draw arcs to the left of points 3 (Figs. 5 and 6). With arc lengths 3-2 on the half circle, (Fig. 4) as radius, cut the arcs BF (Figs. 5 and 6) and mark the points 2.

g) Transfer lines M and E from Fig. 4 to the vertical leg of a right angle, and fall distance A to the horizontal leg. The hypotenuse lines AE and AM are the developed lines. With points N, (Figs. 5 and 6) as centers and radius AM, draw arcs to the right of points 6 on both patterns. With arc length 6-7 on the half circle, (Fig. 4) as radius, and points 6, (Figs. 5 and 6) as centers, cut the arcs AM and mark the points 7. With developed line AE as radius, and points R, (Figs. 5 and 6) as centers, draw arcs to the left of points 2. With arc length 2-1 on the half circle, (Fig. 4) as radius, and points 2, (Figs. 5 and 6) as centers, cut the arcs AE and mark the points 1.

h) With points 1, (Figs. 5 and 6) as centers, and line length E, (Fig. 4) as radius, draw arcs to the left of points R. With the $\frac{3}{4}$ in. half width length, (Fig. 4) as radius, and points R, (Figs. 5 and 6) as centers, cut the arcs E and mark the points S.

i) Set a compass at line length M, (Fig. 4) and with points 7, (Figs. 5 and 6) as centers, draw arcs to the right of points N. With the $\frac{3}{4}$ in. half width, (Fig. 4) as radius, and points N, (Figs. 5 and 6) as centers, cut the arcs M, and mark the points T.

j) Through the developed lines, draw the outline of both patterns.

From lines SR (Figs. 5 and 6) and line RN (Fig. 6) measure down the given $\frac{1}{4}$ in. flange length and draw lines parallel to lines SR and RN. From lines NT (Figs. 5 and 6) measure down $\frac{1}{4}$ in. and draw a line parallel to and equal in length to line NT.

Through the developed points draw the pattern outline and the work lines.

Add allowances for seams and joints and mark the patterns for fabrication.

Here Are Tips On Selecting Dust Control Equipment

Control of process dust is recognized as essential to modern industry; this two-part discussion will help contractors evaluate the applications, dust and gas system characteristics as well as the collectors themselves in order to provide the best possible installation to meet any requirement

By John M. Kane

**Manager, Dust Control Products
American Air Filter Co., Inc.**



WET DYNAMIC PRECIPITATOR is used as a final cleaner for wood sander dust escaping dry centrifugal collectors

MANY OF THE discussions of industrial dust collector principles of operation, theory of performance, and evaluation of applications have overlooked a large group of people often confronted with a dust collector requirement. Under such circumstances, the engineers and estimators working for sheet metal contractors will generally rely on the equipment manufacturer for guidance in the degree of cleaning required, exhaust volume, and the most suitable control method at the source of dust generation.

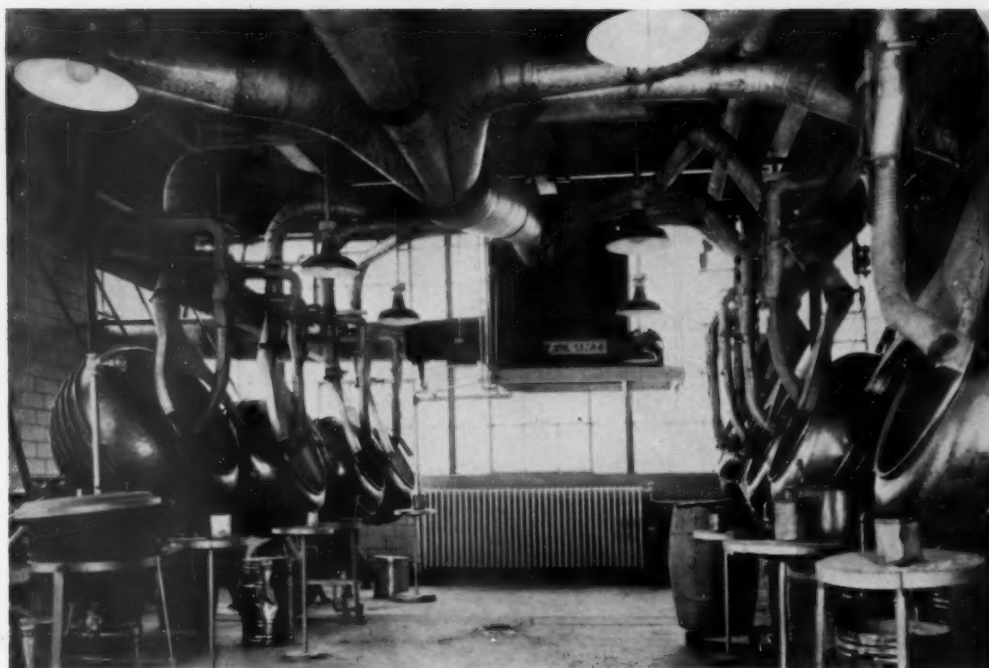
The following observations suggest the proper equipment to consider when submitting bids for a collector installation. To illustrate by extremes, it would be illogical to bid or recommend high voltage electrostatic precipitators for a woodworking or metallic buffing operation; or a dry centrifugal collector for a metallurgical fume collection problem.

What Are Applications?

Dust collecting devices are usually installed for one or more of the following purposes:

Prevent damage or nuisance to property — Discharge of process dust to the atmosphere from stacks not equipped with effective air cleaning devices permits the coarser particles to settle in the general area of the stack. Such settlement can be a nuisance to neighborhood property and in many cases actually cause damage from oxidation or chemical attack. Finer particles stay in suspension and contribute to the air pollution problems of the community.

Prevent re-entry of contaminants to workroom air — Air cleaning equipment will prevent the re-entry of



COATING PANS for coating tablets, chewing gum, etc. are exhausted by wet dynamic precipitator. Note intricate exhaust hooding and air supply

contaminants from exhaust systems back to the workroom air. Without collectors, discharged contaminants could be swirled from exhaust stacks back to the workroom through open windows and doors or picked up by fresh air supply and makeup air systems.

Reclaim usable material — Collection of salvagable material by air cleaning equipment is a major reason for dust collector installation. Many fine materials are conveyed by air through duct systems using the air stream as the transport media. Collectors are essential elements in such systems which are used extensively in the textile, grain, food processing, and chemical industries.

Reduce fire or explosion hazards — Collection of fine dust, especially from organic materials, can eliminate the fire hazards introduced by settled material discharged from exhaust systems controlling such items. Danger from fine explosive dusts can also be reduced by using a dust collector of a design that will remove and store such materials safely. Wet type dust collectors have been used extensively for this purpose in the manufacture of explosives and the collection of magnesium.

Permit recirculation of cleaned air to working space or process — With the rapid expansion in the use of exhaust systems, the factor of quantities of air involved in expanded ventilation usage has taxed heating facilities and retarded flexibility of dust-producing plant equipment relocation.

A given dust collection problem should be evaluated either:

- a) On the basis of known and recognized collector design for the particular problem;
- b) On evaluation of the dust characteristics, carrier

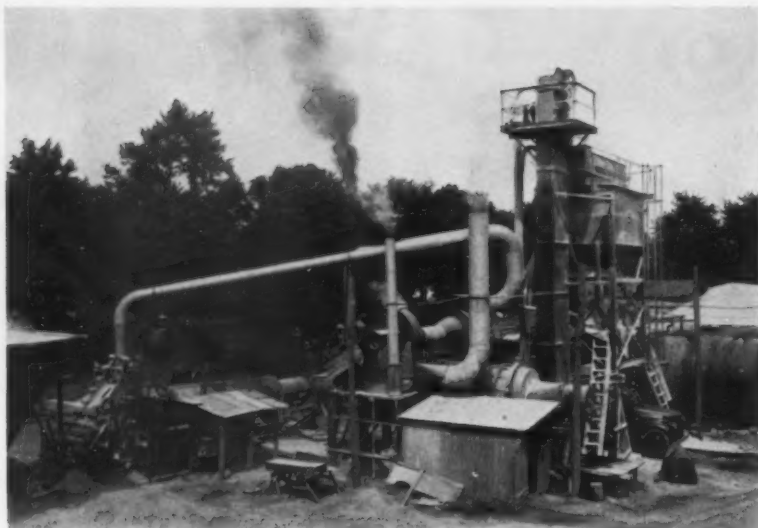
gas stream characteristics, and requirements of the dust control devices.

Know Dust Characteristics

In the latter case, the following comments could serve as a check list of information required and decisions to be made for a solution to a specific application.

Mean particle size and range — Obviously, the coarser the particle and the narrower the range of sizes, the easier the removal and the less expensive the control equipment indicated. If all particles were of a stated size, collection would be better with any dust collector than is actually attained, since we are dealing with a mean particle size with considerable quantities smaller and larger than stated. Deviation from the mean does describe this range, although most dusts produced from industrial operations have a surprising consistency in the range of variation both ways from the mean.

Concentration — The heavier the concentration, the higher will be the collector efficiency required to reduce the quantities discharged to the atmosphere. For a given exhaust volume, a collector with 50 percent collection efficiency on a loading of one grain per cu ft will discharge with the cleaned air the same number of pounds as a device with 90 percent collection with a loading of five grains. Such illustrations, however, have one major flaw too frequently overlooked in that the particles escaping the collector with 50 percent control would be much larger and would settle more quickly in the immediate area than in the case of the more efficient collector operating on the same or the higher loading. This comment is the only drawback to the frequently heard advice, "evaluate



DRY CENTRIFUGAL collector and wet dynamic precipitator provide effective dust control from dual aggregate dryer, screen and mixer in asphalt plant

the amount of material *escaping* the dust collector instead of the percentage caught."

The range of mean particle sizes and concentrations shown in Table 1 will help for the operations listed and will give a background for probable conditions for similar problems in fields where data has not been so extensively observed and checked. Where air or gas density differs from standard air (70 F and 29.92 in. Hg), reduction to these standard conditions will help in the evaluation.

Abrasive characteristics — There is nothing more exasperating to a purchaser and more embarrassing to a supplier than the wearing through of a dust collector in a few months of service. Two general errors in evaluation account for many abrasive difficulties:

a) Failure to evaluate concentration, particle size, and particle shape. Of the three, particle size is the most frequently overlooked. Abrasion on collector surfaces per pound of material collected is a function of surface area of the particles. As surface area varies roughly as the cube, it is apparent that the surface area of a given weight of one micron particles will have roughly 1000 times the surface of a similar weight of 10 micron particles. The same 1000 factor applies between 10 microns and 100 microns. It is particle size more than concentration that explains the greatly increased abrasion from pulverized fuel fly ash as compared to fly ash from spreader stoker fired boilers; from rock crushers compared to metallic grinding with an abrasive wheel.

b) Where abrasion is anticipated, reduction in trouble is often attempted by trapping out a large portion of the dust load before it reaches the exhauster or collector. Removal of 85 percent of the dust load by such a primary device seldom does more than double the equipment life on the downstream side. The reason has been explored in "a" above — the coarse particles with small surface area per pound are eliminated, but the fines with their extensive surface area still remain

to rub against the metallic surfaces under discussion. Abrasion possibilities should be evaluated whenever organic dusts are involved. Grains hulls, tobacco leaf and stems cause surprising amounts of abrasion.

On the other hand, many reported cases of collector deterioration from premature wear is caused by poor collector design, installation or operation. Under such cases, dust loadings may recycle within the collector causing wear equivalent to many times the entering concentration.

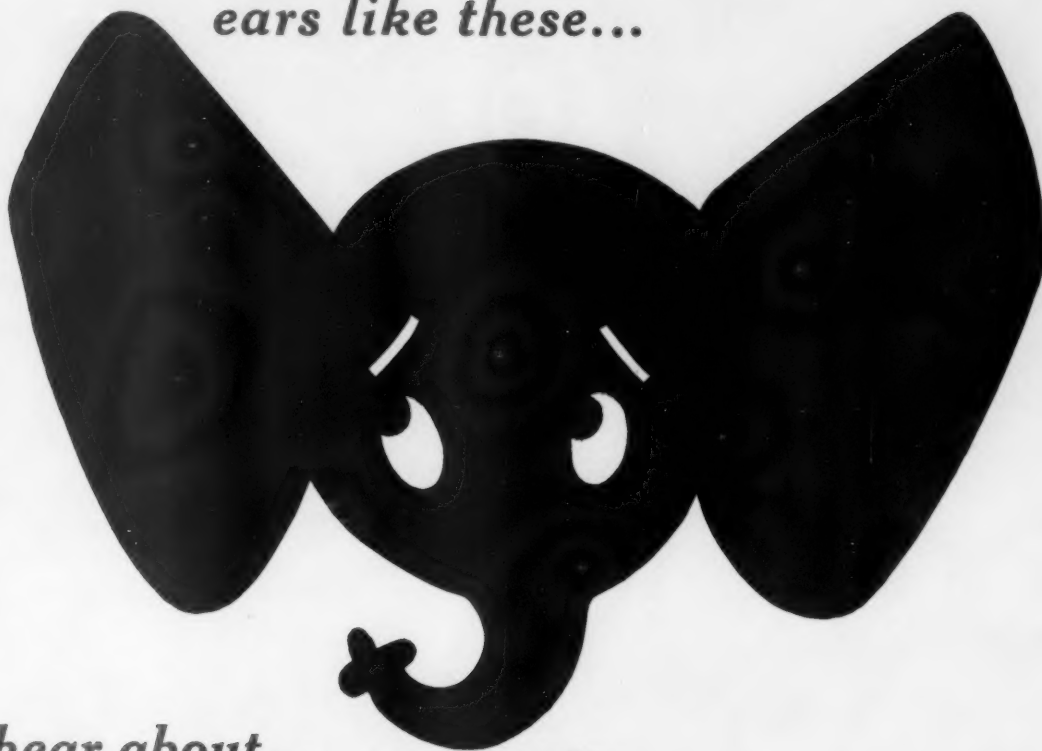
Adhesive characteristics — Some collectors are more critical than others to plugging caused by sticky materials, packing of the dust passing through or by hygroscopic characteristics of the materials. Collectors with small air passages and collectors in the fabric group would be most susceptible to such problems.

Bridging characteristics — In many industrial dust control problems, bridging can cause plugging of collector passages and dust disposal devices. Physical dimensions of wood chips from woodworking can be greater than the passages provided for their removal or disposal; "onion skin" wood shavings and lint dusts can bridge between collector surfaces, dusts of low specific gravity (having a high degree of voids and low bulk weight) can bridge over dust bin discharge openings. Bin vibrators will prevent bridging trouble in hoppers as long as no storage occurs in the dust hopper. With many materials, bridging is accelerated by vibrators due to the packing action in partially full storage hoppers.

Fire or explosion hazard — Evaluation of safeguards is recommended where dust is from organic materials such as spices, grain, wood flour, cotton lint; chemicals such as sulphur; materials used in the manufacture of plastics; magnesium, aluminum and coal. The smaller the particle size, the greater the rate of flame propagation. Fortunately, concentrations in exhaust systems are usually below minimum explosive concentration

(Continued on page 92)

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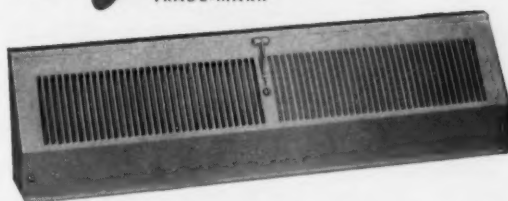
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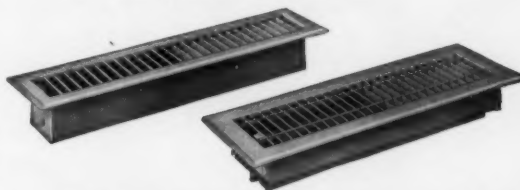
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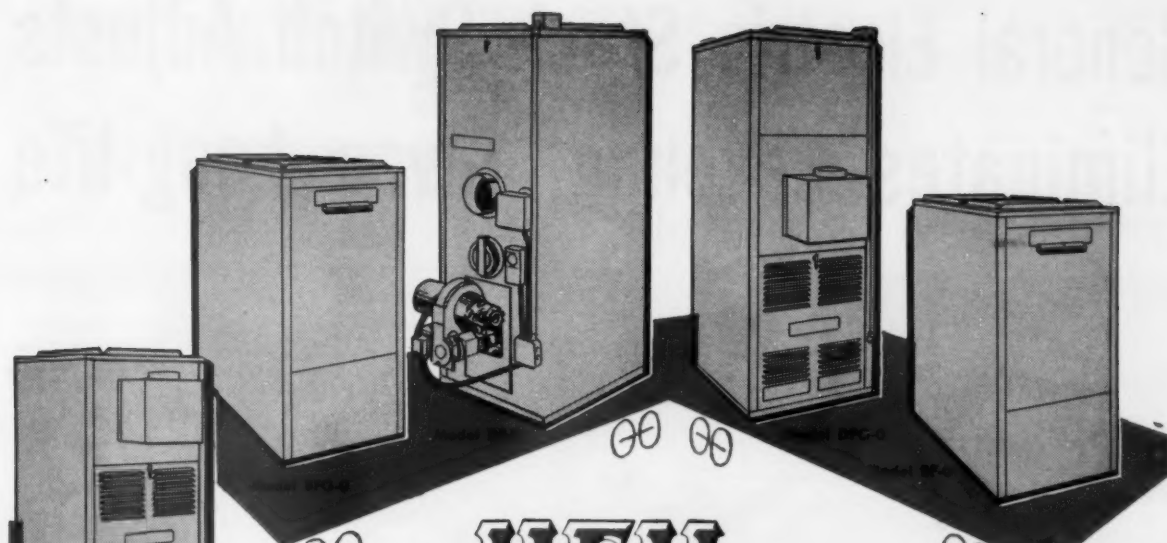
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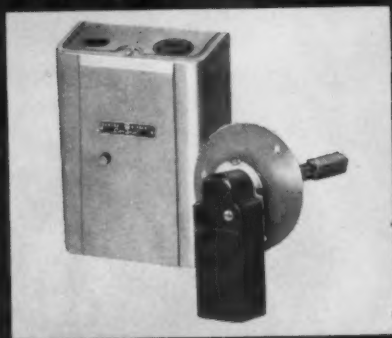
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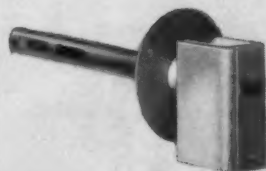
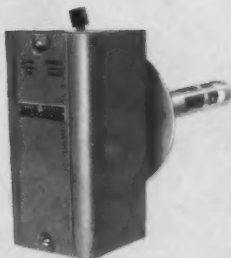
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How to Select Dust Collectors

(Continued from page 86)

and a source of ignition is unlikely. The hazard is greatest where mechanical attrition occurs in the process or where dust loadings are very high as in pneumatic conveying systems.

Watch Cutting Torch

The biggest hazard from fire or explosion in dry type dust collectors is the welding rod or cutting torch used by maintenance and repair personnel.

Foreign material — Certain industries appear unable to keep workmen from disposing of cleaning rags, lunch wrappers and cigarette packages through the exhaust hoods provided for their comfort and protection. Such foreign materials can play havoc with dust collectors and dust disposal devices. Quantities are too great in most cases to be screened out without the danger of screen plugging and consequently, extreme reduction in exhaust volume.

Corrosive gases — Corrosive gases are especially significant in wet collector designs and may necessitate expensive special construction materials. Where combustion gases are handled by wet collectors, corrosion possibilities should be evaluated carefully. Neutralizing of supply water is expensive and is seldom a complete answer. Only a portion of such gases are scrubbed out by the water in the dust collector passages and corrosion is often the greatest problem on the damp surfaces of cleaned gas passages, exhauster, and discharge stack.

TABLE 1—CONCENTRATIONS and particle sizes of dusts from various sources provide data for selecting collectors

Dust Source	Range of concentration, gr per cu ft	Mass mean particle size, microns
Abrasive Cleaning		
Blasting, tumbling (grit, sand) mills	0.5 to 15.0	3 to 10.5
Driers, Kilns, Coolers		
Tube, flash, rotary	1.0 to 50.0	3 to 25
Melting Furnaces		
Brass, steel, blast, smelter cupola	0.2 to 10	5 to 20
Fly Ash		
Hand, stoker, pulverized coal firing	0.2 to 5.0	8 to 18
Foundry		
Sand systems	3.0 to 7.0	2 to 10
Shakeout	0.5 to 3.0	0.8 to 3
Metal Working		
Grinding	0.05 to 0.5	10 to 100
Fumes	0.005 to 0.2	0.2 to 0.7
Oil Mists	0.014 to 1.0	0.5 to 3.0
Acid Mists		
Open surface tanks	0.005 to .014	0.5 to 3.0
Atmospheric Dusts		
Rural	0.00002 to 0.00005	0.3 to 3.0
City	0.00005 to 0.0002	
Industrial	0.0002 to 0.0075	
Pneumatic Conveying	50 to 20,000	over 100

In less frequent cases, dry gases can cause attack on fabrics in collectors, or set up electrolytic attack on metallic parts.

Volume — The total cfm of gas to be cleaned will influence collector selection in several respects.

1) Unit collectors could be applied to small systems involving up to a few thousand cfm. They would seldom have place where large volumes are handled as the prohibitive equipment cost, floor space, number of servicing and dust disposal points would point in favor of using one or more central systems.

2) Very large volumes from numerous dust producing points are often broken into several smaller systems to provide greater flexibility and will more readily accommodate exhaust system and dust collector relocation when changes in plant processes or layout are made.

3) Some dust collector efficiencies decrease with size which could rule out selection for large volumes. A geometrically similar cyclone designed for 50,000 cfm is measurably lower in efficiency than one dimensioned for 5000 cfm.

4) Cost can rule out some designs except under extreme circumstances. Rarely will high voltage electrostatic precipitators be used for volumes under 25,000 to 50,000 cfm. Cost of accessory electrical equipment makes cost per unit of volume high where smaller volumes are involved. For volumes under 1500 to 2500 cfm, installed cost of wet collectors is high with the need for water supply and drain connections.

Gas temperature — Many collectors have temperature limitations beyond which they can be used only with special materials or expensive accessory equipment. Standard fabric arresters are not recommended with cotton filter media for more than 170 or 180 F; with wool not over 200 F. Even with expensive synthetic fabrics, 275 F is the usual upper limit without elaborate gas cooling auxiliary equipment.

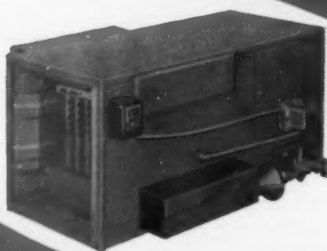
Dry mechanical collectors of standard steel construction are usually limited to 750 F although stationary designs, especially with cast metal parts, are often found in service up to 900 F.

Condensable vapors — Presence of mists, steam, high water vapor content, or other condensable vapors can make many collectors inoperative by "mudding" the circuits between dust deposits and collector surfaces.

Dry centrifugals with small dust discharge ports will plug in outdoor locations during startup of dryers on cool mornings; the value of fabric arresters is questionable on foundry shakeout and sand conditioning systems due to vapor picked up by the exhaust air from the hot sand.

An evaluation of the types of dust collectors for a wide range of industrial processes, together with illustrations and arbitrary ratings for each, will be presented in American Artisan next month.

the greatest
dollar value
...Utility
WEATHERAMIC

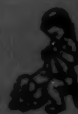


HORIZONTAL FORCED AIR FURNACE

Modern forced air heating doesn't have to cost a "modern" price. Utility has engineered its new Weatheramic® line of Horizontal Forced Air Furnaces to fit installations where both dollars and floor space are limited. Color styled in Bank Note Green, these units are compact and easy to install in an attic, under the stairs, or any otherwise unusable space. Quiet, economical operation is assured by Utility's patented 3-speed variable Dy-Rekt® Drive Blower and diaphragm control valves. As with all Weatheramic forced air furnaces and air conditioners, installation costs and problems are reduced by factory pre-wiring and completely assembled manifold. Backed with a written guarantee, you'll have no trouble selling Weatheramic "Horizontals" whenever luxury forced air heating is desired at low cost.

UTILITY
APPLIANCE CORP.
Manufacturers of
Utility Furnaces,
Air Coolers,
Air Conditioners,
Water Heaters and
Buffers & Sattler
and Occidental
Gas Ranges

Weatheramic LINE



FORCED AIR FURNACES/AIR CONDITIONERS

UTILITY APPLIANCE CORP. 4851 south alameda street, los angeles 58, california

LARGE AUTOMOTIVE MANUFACTURING PLANT
Tonawanda, N. Y.



Architect & Engineer: **H. E. BEYSTER & ASSOCIATES, INC.**, Detroit, Mich.
General Contractor: **THE JOHN W. COWPER CO., INC.**, Buffalo, N. Y.
Sheet Metal Cont.: **WEAVER METAL & ROOFING CO., INC.**, Buffalo, N. Y.
Revere Dist.: **WHOLESALE BUILDING MATERIALS CORP.**, Syracuse, N. Y.

In this 1,000,000-square-foot plant expansion program, there were 80,000 lbs. of Revere Sheet Copper used covering every conceivable type of flashing. Here are some of the more important reasons why copper was chosen as the material for the job: Copper has been "century-tested" . . . no other metal can come even close to equaling the centuries of satisfactory service enjoyed by copper. The reason for this endurance performance is due to the non-rusting qualities of copper. Copper lends itself to any type of architecture. It is readily fabricated into any desired shape, being formed and soldered without special tools or undue effort. To wrap it up . . . there is not another metal or alloy that has all of the desirable construction characteristics of copper.

You don't get an expansion joint like the one shown on the opposite page every day in the week, so we thought it would prove interesting both to architects and contractors to show how this particular joint was constructed.

To make it easy to follow we have shown both photographs and details of the various steps. This particular joint bridged the gap caused by adding a new section to an existing plant.

As an added service to architects and sheet metal men all Revere Sheet, Strip and Roll Copper is now marked with the correct gauge and temper in water soluble ink. Ask your distributor to show you. Also ask him about the neat-appearing, weather-tight, easy-to-install Revere-Key-stone 2-Piece Cap Flashing.*

*Patent No. 2,641,203 Other Pat. Pending

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Brooklyn, N. Y.; Chicago, Clinton and
Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.;
New Bedford, Mass.; Newport, Ark.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.

FREE! For group showing—instructive 16 mm motion picture in sound and color—"SHEET METAL IN BUILDING CONSTRUCTION."
A "must" for every Architect, Building Owner, Spec. Writer, Sheet Metal Contractor and Mechanic. Write Revere Advertising Dept.

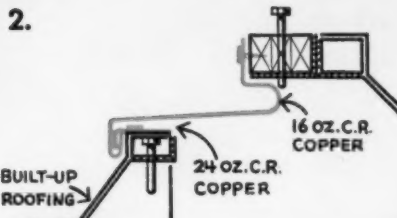
Another case of REVERE helping you...

This advertisement appears in
ARCHITECTURAL FORUM, ARCHITECTURAL
RECORD and PROGRESSIVE ARCHITECTURE.

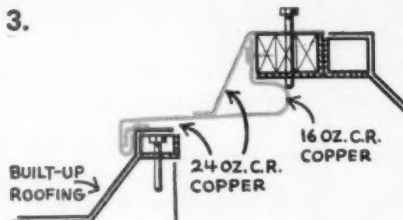
It tells Architects, Builders and Engineers
the many advantages of specifying enduring
Revere Copper for their jobs, thus promoting
the use of more copper by you... the metal
you prefer to work with... the "ageless"
metal that you can trust to protect your
reputation for a quality job.



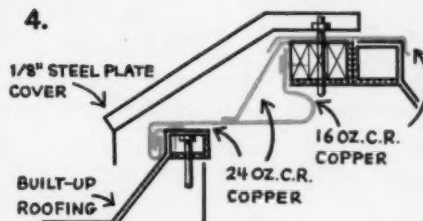
1.
PUTTING FASTENING STRIP into
place. 24 oz. Revere Cold Rolled Copper
was used.



2.
PREFABRICATED 8' STRIPS were then put into place. Here
16 oz. Revere Cold Rolled Copper was used.



3.
24-OZ. REVERE COPPER COVER STRIP was then put into
place. This strip acts as a run-off and prevents seepage into
the joint.



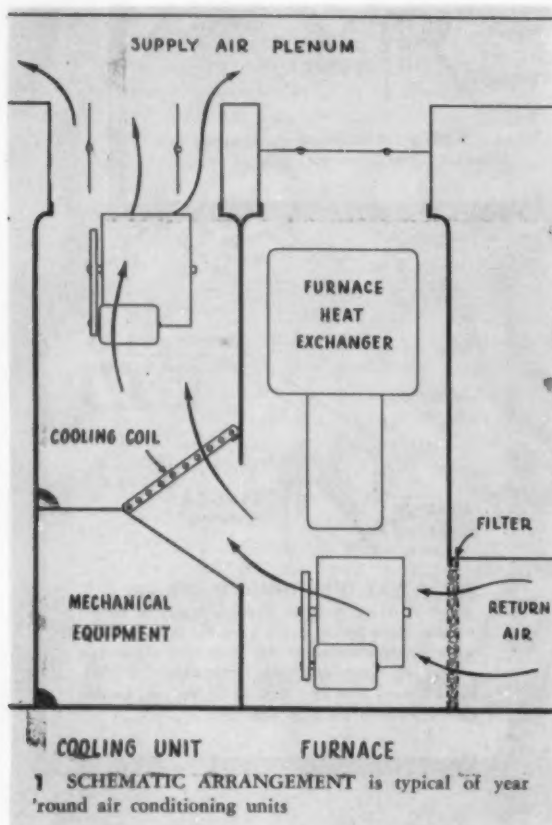
4.
JOINT WAS THEN FINISHED OFF with 8 ft.
strips of 16 oz. Revere Sheet Copper as shown
above. Note that in every case the copper strips
were prefabricated in the shop and delivered
on the job ready for instant assembly. Prefabrication
saves time and trouble on the job, avoids
delays caused by bad weather.

Dealer is 'Manufacturer' of Air Conditioning Systems

... and the cooling unit is but a component of the complete system. That's why the dealer must assume responsibility for providing maximum comfort through improved design and load calculations

By Herbert T. Gilkey

Technical Secretary, NWAHACA



THE DEALER WHO designs and installs summer cooling equipment is the most important single factor in its successful operation. If he is skilled, the system will work as it should. The skilled and experienced dealer will point out many of the essential factors that enter into selecting and installing the equipment to the builder or prospective homeowner. On the other hand an inexperienced dealer is less likely to sell good practice to the homeowner and might even attempt to cool a house in which the heat cannot even be kept down within bearable limits. Furthermore, the proper servicing of air conditioning systems is more of a problem than the proper servicing of heating systems. Here again, the integrity and experience of the dealer enter the picture.

Who Is Reliable Dealer?

The importance of the dealer in this picture cannot be overemphasized. Actually, he is the manufacturer of the air conditioning system and the cooling unit is merely one of the components of the system. Thus, when you purchase either a year 'round or winter air conditioning system, you are purchasing indoor comfort by John Jones, dealer, not heating and cooling by hot and cold mechanical equipment. Unfortunately, there are no exact criteria for choosing a reliable dealer.

The only questions the consumer can ask are:

- a) Does the dealer sell on performance or on price alone?
- b) Does he base his designs on reliable procedures such as those outlined in the manuals of the National Warm Air Heating and Air Conditioning Association, or does he try shortcut, rule-of-thumb methods?
- c) What is his reputation as a business man and among former customers?

These are indefinite at best, but there is little else upon which to base the choice.

Customers Need Orientation

The occupants of the house often need orientation on how to live with air conditioning. In the first place, too many people seem to feel that a thermostat is an accelerator rather than a temperature actuated on-off switch. Secondly, it is difficult for some people to realize that a cooling unit needs time to remove heat and that they

(Continued on page 100)

SAVES 50% ON CLEAN AIR MAINTENANCE COSTS!

THE FIRST TOTALLY NEW FILTER DEVELOPMENT . . . IN 25 YEARS

***This is not an idle claim . . . It's a fact . . . PROVEN UNDER ACTUAL INSTALLATION AND MAINTENANCE CONDITIONS.**

Make no mistake about it . . . no matter how small your filter requirements . . . or how large, here is a completely new air filter development that can absolutely cut your clean air maintenance costs in half.

NO HEAVY TENSION OIL — Evans filters do not have a messy, sticky type of adhesive that is filthy to handle and difficult to clean. It is unnecessary and is forbidden in the use of Evans filters.

CLEAN WITH TAP WATER — Evans filters can be cleaned clean in minutes with nothing ever but tap water sprayed through an ordinary garden hose nozzle. They require no expensive fireproof room. No caustic cleaning solutions or agents. This eliminates all danger in the cleaning of Evans filters.

LIGHT WEIGHT CUT LABOR COSTS — Evans filters are all aluminum. Light to handle, to carry, to pick up. In spite of airtight fitting frames, Evans filters pull quickly and easily in and out of the frames. Take much less effort, less labor to handle. No latches . . . or lugs required.

REMEMBER: Initial costs for air cleaning equipment are not the big factors or controlling factors in the cost for clean air.

IT'S OPERATING COSTS THAT YOU MUST LIVE WITH AND THAT YOU MUST CONTROL.

EVANS FILTERS GIVE YOU THAT CONTROL. MAKE IT POSSIBLE FOR YOU TO SAVE 50% ON CLEAN AIR MAINTENANCE COSTS.

- ALL ALUMINUM
- EVERY PART PRECISION MADE
- HOLD UP TO 200% MORE DUST
- AND LINT WITHOUT HARMFUL RESTRICTION TO AIRFLOW
- GIVES LIFETIME SERVICE

FREE CATALOG MAIL COUPON TODAY

THE GEORGE EVANS CORPORATION • MOLINE, ILLINOIS

Gentlemen: I wish to know how to cut my clean air maintenance costs in half with a filter that gives lifetime service. Please send me new illustrated catalog.

Name

Company

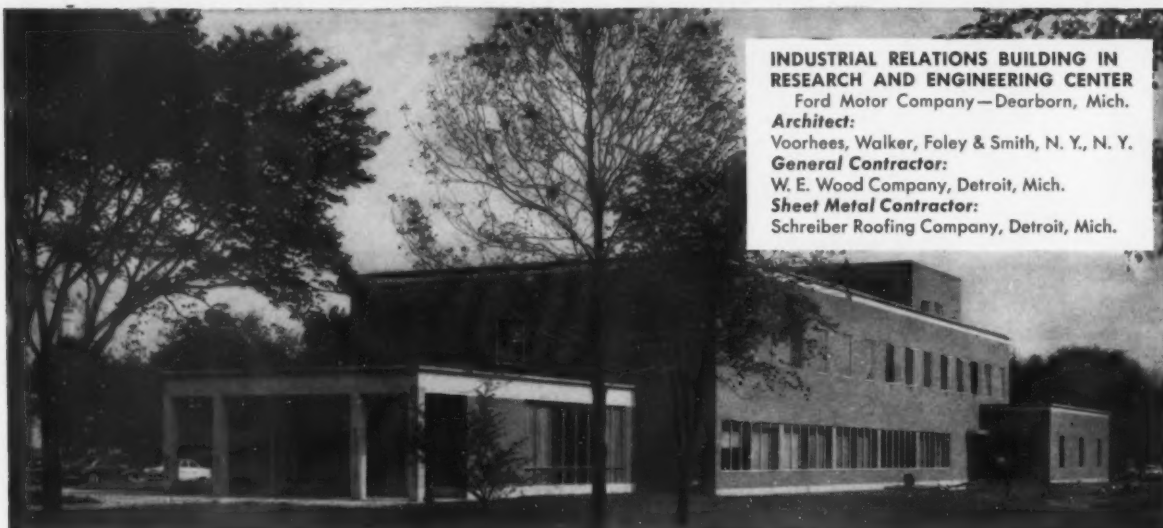
Address

City State

Evans

Lifelong AIR FILTERS

OUTSTANDING!



INDUSTRIAL RELATIONS BUILDING IN RESEARCH AND ENGINEERING CENTER

Ford Motor Company—Dearborn, Mich.

Architect:

Voorhees, Walker, Foley & Smith, N. Y., N. Y.

General Contractor:

W. E. Wood Company, Detroit, Mich.

Sheet Metal Contractor:

Schreiber Roofing Company, Detroit, Mich.

Another installation of Chase® Copper Base Flashing Expansion Joint!

More than 1600 feet of Chase Copper Base Flashing went into this new Ford Motor Company building, protecting the vital juncture where the flat, built-up roof meets vertical masonry walls.

A solid copper perimeter flashes the base, and though every seam is soldered, the unique Chase Copper Base Flashing Expansion Joint will allow for expansion and contraction of the metal!

Now, there is no need to allow for temperature changes by using loose-lock, "hope-for-the-best" seams. Simply install Chase Copper Base Flashing Expansion Joint! The push-pull of temperature change is absorbed safely and surely, while seams stay completely watertight!

See that *your* installations get the protection of Chase Copper Base Flashing Expansion Joint—for information and specifications, write Chase!



*Installing Chase Copper
Base Flashing Expansion Joint*

Chase

BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass & Copper

Atlanta	Chicago	Denver	Indianapolis	Minneapolis	Philadelphia
Baltimore	Cincinnati	Detroit	Kansas City, Mo.	Newark	Pittsburgh
Boston	Cleveland	Grand Rapids	Los Angeles	New Orleans	Providence
Charlotte	Dallas	Houston	Memphis	New York	Rochester
	St. Louis	San Francisco	Seattle	Waterbury	

NO "OFF" SEASON WHEN YOU SELL WINKLER

**Complete heating—cooling line
keeps sales up the year 'round**

For *heating* only...for *heating and cooling*...or for *cooling* only, there is no home comfort requirement which can't be satisfied with Winkler equipment. In selling either new home builders or modernizers, you need never miss a sale because of a "short" line. The illustrations here show a few of the many combinations possible with Winkler Heating and Cooling Products.

Winkler backs up *quality of product* with thorough instruction in *productive salesmanship*! At the Winkler Training Institute, ingenious "visualizers" and expert instructors take all the mystery out of air conditioning—show dealers how to sell Winkler Products and install them for maximum customer satisfaction.

That's why the Winkler Direct Factory Franchise is a growing and enduring asset for dealers who take advantage of its many profit-making features. Why not write today for details.

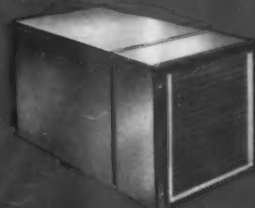
(Left) Basement furnace with Evaporator Cooling Coil on top.
(Right) Vertical furnace for perimeter heating and cooling. Evaporator Coil is at floor level.



"A" type Evaporator Coil without casing—for vertical air flow.



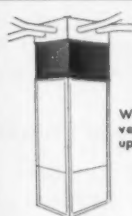
Evaporator Coil for horizontal air flow.



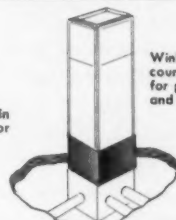
Blower and horizontal air flow Evaporator Coil.



Condensing Unit. Ruggedly constructed—built of selected materials—in every way qualified to perform efficiently and long.



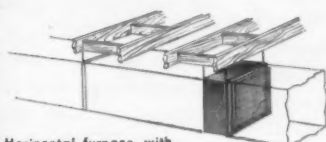
Winkler Evaporator in vertical furnace for upflow circulation.



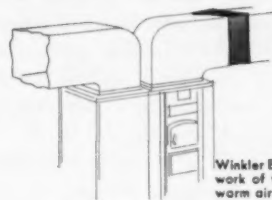
Winkler Evaporator in counterflow furnace for perimeter heating and cooling.



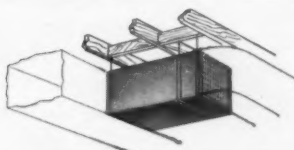
Basement furnace with Winkler Evaporator on top.



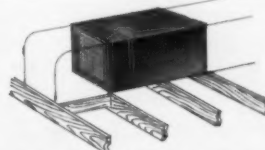
Horizontal furnace with Winkler Evaporator can be suspended in basement, crawl space or overhead.



Winkler Evaporator in duct work of forced circulation warm air system.



Basement or crawl space installation of Winkler Evaporator and Blower in steam or hot water heated home.



In homes with steam or hot water heat, a Winkler Evaporator and Blower may be installed in attic or upstairs hall.

Makers of Oil and Gas-fired Boilers and Furnaces...Gas Conversion Burners...Oil Burners...Stokers...Air Conditioning Equipment

WINKLER

WRITE TODAY FOR DIRECT FACTORY FRANCHISE DETAILS

STEWART-WARNER CORPORATION

U. S. MACHINE DIVISION • Dept. A-26 • LEBANON, INDIANA



Field Engineering to Solve A C Problems

(Continued from page 96)

cannot allow the temperature to build up in the house early in the day if they expect to maintain the desired temperature during the heat of the day. These facts may seem obvious, but they are by no means extreme examples of problems which have been encountered.

As air conditioning comes to the mass housing market, it is obviously going to be impossible for each and every installation to be designed and supervised by a professional engineer. Even if this were economically feasible, it would be physically impossible — there just aren't enough engineers. Nevertheless, engineering must be applied to residential installations. The solution lies in educating the air conditioning dealer in the fundamentals of load calculation and system design, and giving him basic engineering data in a form which he can use.

Residential Jobs Have Their Own Problems

Each residential job represents a much smaller investment than does any but the smallest of commercial or industrial installations. Similarly, the cooling capacity of a residential cooling unit is almost insignificant compared to the hundreds or even thousands of tons which may be installed in a store or office building. Nevertheless, residential air conditioning presents its own problems, some of which are more difficult to solve than their industrial or commercial counterparts. Furthermore, the designer and installer do not have at their disposal any but the most basic of equipment — a refrigeration unit, a distribution system, and a temperature controller. They must provide summertime indoor comfort under conditions of widely varying internal and external loads, both sensible and latent, with no method of capacity control other than a temperature-actuated on-off switch, and usually without the use of humidity controls, reheat, bypass, etc. They must also provide a system which the homeowner can operate himself and which can be converted from cooling to heating at the flick of a switch. The unit must be quiet during operation; it must be economical to operate; it must be attractive in appearance; and the less floor space it occupies, the better. Thus, the field of residential air conditioning is not without its problems — problems which must be solved with the most basic of tools.

What Are Components?

Because the successful solution of any problem is dependent upon the identification and location of the problem, we should first define the air conditioning system in terms of components. The first and most obvious component of the system is the air conditioning unit itself. Important though it may be, it cannot be said that the air conditioning unit is the most important part of the system. The second component is the distribution sys-

tem, its design and installation. The third variable is the house itself. If it has not been properly designed, insulated and orientated, it will be impossible to cool it satisfactorily. Lastly, we have the human element — the designer, the installer and the homeowner. Regardless of the appropriateness of the other factors, the system cannot function properly if the human beings involved with its operation do not fit the parts together into a complete and efficient unit.

The choice and design of the air distribution system are usually the responsibility of the installing dealer-contractor. This will become even more common as air conditioning becomes more popular for the medium and lower priced home. Almost any of the duct systems used for heating can be successfully applied for air conditioning. This makes the choice of the system relatively simple, but the design is complicated by the fact that both heating and cooling requirements must be considered. Involved in this consideration are the possibility of different air flow rates for summer and winter, and the probability that the heating load may be distributed differently from the cooling load.

Low Ceilings Present Draft Problem

One of the considerations in the design of the duct system is the choice of the location and type of outlets which are to be used. The traditional outlet location for air conditioning is either high in the sidewall or in the ceiling. Each of these locations has its place in the residential field, but the relatively low ceilings common in contemporary residential construction present problems when either high sidewall or ceiling outlets are used, since it is difficult to obtain sufficient diffusion and mixing with the room air to eliminate the draft problem completely.

One of the most promising distribution systems for cooling is the perimeter system, which has been found to be excellent for heating. Where ducts are embedded in concrete the factor of condensation on the floor surface above the ducts may arise. That possibility, however, is made less likely by the relatively dry conditioned air in the rooms above the ducts and by the insulating effect of the concrete surrounding the ducts. During two summers of study at the University of Illinois, no condensation was observed on the floor surface when this type of duct system was used.

Perimeter System Is Versatile

The basic feature of the perimeter duct system is the location of the diffusers — in the floor, low in the sidewall, or in the baseboard, usually beneath a window. Since this is the important factor, the perimeter system can be used in any type of construction.

(Continued on page 104)



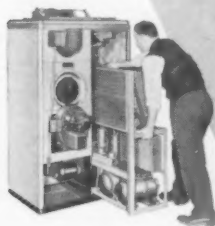
5 TON
Water Cooled
Year 'Round Air Conditioner.
Gas Fired: 175,000 or
140,000 B.T.U. Input.
Oil Fired: 140,000 or
112,000 B.T.U.
at Bonnet.



2 OR 3 TON
Year 'Round Unit.
Gas or Oil Fired.
3 Ton, Air or Water Cooled
—140,000 B.T.U. Input.
2 Ton, Air or Water Cooled
—100,000 B.T.U. Input.



COUNTERBELOW
2 or 3 Ton
Year 'Round Unit.
Gas or Oil Fired.
3 Ton, Air Cooled only
—140,000 B.T.U. Input.
2 Ton, Air or Water Cooled
—100,000 B.T.U. Input.



WATER COOLED
Hermetically Sealed 2, 3 or 5 Ton
Cooling Circuit is installed completely
within Furnace Cabinet. Cooling Coil
only of Air Cooled Circuit is similarly
installed. And, as shown at right—

Simpler... Speedier... Easier...

MORE PROFITABLE

Installations With

MONCRIEF

Year 'Round Air Conditioners!

For the home owner, the builder or the architect who wants year 'round air conditioning for his home, you can give him what he wants when you sell him the Moncrief Year 'Round Air Conditioning Unit—an up-to-date, 1956, modern type of unit—with both the Heating Plant and Cooling Circuit built into a single cabinet, which is compact, attractive and superlatively engineered.

2, 3 or 5 Ton Cooling is combined with a range of heating capacities to provide balanced distribution of heated and cooled air for virtually any operating condition. And, both the heated and cooled air are supplied from a handsome cabinet that requires less floor space than many standard furnaces.

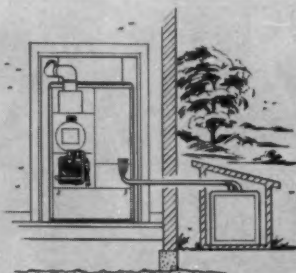
Install Now for Gas or Oil Heating

Without the Cooling System, the Moncrief Year 'Round Unit affords superior winter air conditioning—costs your customer but little more than a conventional heating unit. Your initial sale and first profit are assured!

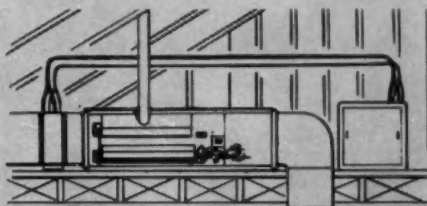
Add Either Air or Water Cooling Later

When your customer is ready, you can conveniently install either the 2 or 3 ton, Air Cooled Moncrief Cooling Circuit or the 2, 3 or 5 Ton Moncrief Water Cooled Circuit in the furnace cabinet. You then make an additional sale with a large, extra profit!

Your Moncrief Wholesaler is ready now, to show you how to get into a new Year 'Round Profit Picture.—*more profitably*—with the complete Moncrief Year 'Round Line. Call today!



REMOTE AIR COOLED
2 or 3 Ton Condensing Unit
is installed out of doors, or in
another out-of-the-way place.
Connection to Cooling Coil is made
with Copper Refrigerant Tubing.



COMPACT, HORIZONTAL.
Application of Air Cooled Moncrief
Cooling Circuit is shown above, with
Cooling Coil installed in Air Discharge
Duct of Moncrief Horizontal Furnace and
Condensing Unit remotely installed.

THE HENRY FURNACE COMPANY

• **Medina, Ohio**

HEATING AND AIR CONDITIONING UNITS

MONCRIEF

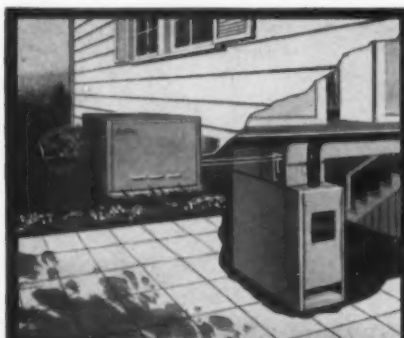
FURNACE PIPE AND FITTINGS

Back of Airtemp
is Chrysler—
the greatest
name in engineering!

Chrysler Airtemp



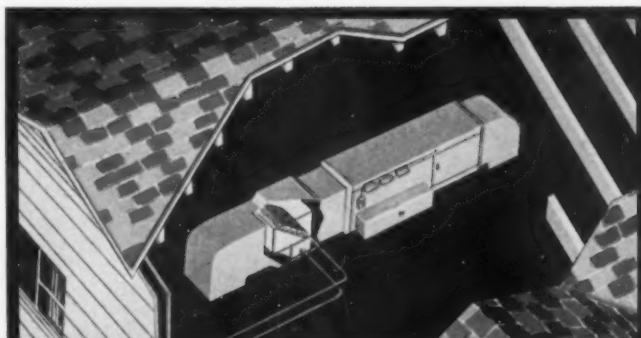
Closet "Spacesaver"—Airtemp Furnace (gas or oil) with matching "V" coil on top and matching waterless or water-cooled condensing unit outside the home (in 2, 3, 5 and 7½ H.P. capacities.)



Basement "Spacesaver"—with matching cooling coil. Coil can also be easily mounted on most any forced air furnace. Airtemp Furnaces may be ordered complete with coil.

GREATER FLEXIBILITY of INSTALLATION with Airtemp Heating and Cooling saves you time and money!

Here are just three of *many* types of yearound installations that are practical with *matched* Airtemp heating and cooling. Whatever the requirements of any job, you can quickly meet them with a combination of Airtemp equipment. This unusual *flexibility* simplifies installations, saves costly man-hours—and makes your heating-cooling jobs even more profitable! Get all the facts on what the Airtemp Franchise can mean to you now! Write Department AA-2, Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.



Attic "Spacesaver"—Airtemp Horizontal Furnace (gas or oil) with matching cooling coil in duct and matching waterless or water-cooled condensing unit outside. For use in crawl spaces also.



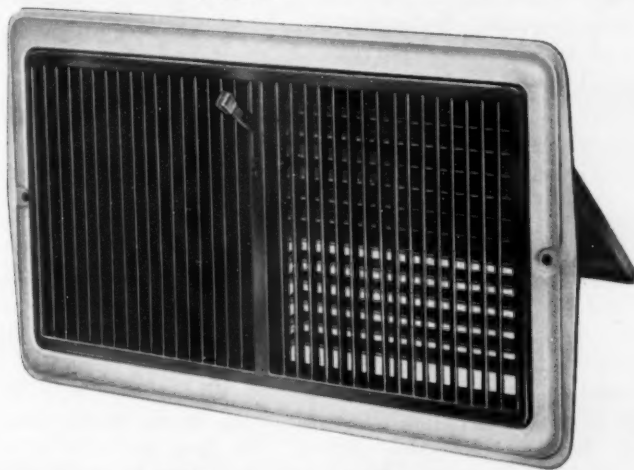
THE FORWARD LOOK IN

HEATING • AIR CONDITIONING FOR HOMES, BUSINESS, INDUSTRY



SAVE 30%

On Your Register Cost With AIR CONTROL'S *Fabulous New* No. 20 REGISTERS



The Register That Has Everything

PERFORMANCE!

Complete 4-way Control of the Air Pattern — Adjustable Vertical Front Fins and Horizontal Back Fins — Balancing Damper controls air volume Without Changing Air Pattern — Increased Free Area. Costs 30% less than any other fully adjustable 4-way control register.

STYLING!

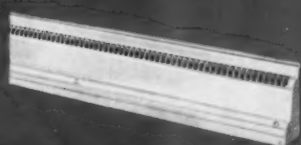
Beautifully contoured styling with two-tone Chameleon Beige decorator finish that blends with any interior. Sculptured plastic operator knob. Available in a complete range of standard sizes, with fins factory-set for optimum *multi-flow* pattern. See your jobber today!



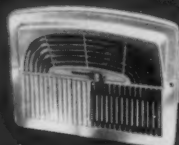
AIR CONTROL PRODUCTS INC., Dept. A., Coopersville, Mich.



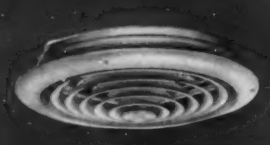
EVERY AIR CONTROL PRODUCT IS TOPS IN ITS CLASS



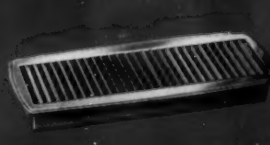
NO. 188 SERIES BASEBOARD DIFFUSER. The only baseboard diffuser with built-in rotary damper. Adjusts bottom base strip permits positioning any part of diffuser over duct... cuts installation time and costs.



NO. 15 SIDEWALL REGISTER. Delivers air over wall in a narrow blanket—no drafts. Two sizes—10 x 6 and 12 x 6—cover every sidewall requirement. No. 16 Out-Of-The-Wall Diffuser also available.



CEILING DIFFUSERS. For overhead heating and air-conditioning installations. Flush, Step-Down, or new adjustable types available in a wide range of popular sizes. Dampers also available separately.



NO. 42 FLOOR DIFFUSERS. Unsurpassed in styling, performance. One-piece face. Extra wide flange covers rough-cut floor opening, simplifies installation. Available at low cost in seven popular sizes.

WRITE FOR NEW '56 CATALOG—SEE YOUR JOBBER

House Orientation Determines Heat Gain Load

(Continued from page 100)

When the air outlet is located low in the room, conditioned air must be delivered at sufficient velocity and so directed that it will rise above head level without causing drafts. This is more of a problem with cooling than it is with heating. In the first place, the supply air is cooler and more dense than the room air, and secondly, people seem to object more to cold drafts than to warm ones. It is therefore necessary that the air velocity at the diffuser face usually be not less than 500 fpm and that it be directed up and in a fan shaped pattern parallel to the wall. In some cases, and with certain types of perimeter diffusers, face velocities of 700 fpm may be desirable.

Don't Overlook 'Obvious' Considerations

To say that a well constructed house will be easier and cheaper to cool is to repeat the obvious, but the obvious is too often overlooked. Furthermore, there are certain considerations which do not become obvious until they are pointed out, and contemporary construction presents a problem not found in older homes. Samuel Lewis, a well known consulting engineer of Chicago, wrote that it is impossible to keep certain types of construction bearably "unhot," let alone comfortably cool.

TABLE 1—EFFECTS OF insulation on Btuh heat gain of residence suggests saving operating and equipment costs by adding insulation at points of maximum gain

	Insulation thickness, in.		
	None	3 1/2	3 1/2
Ceilings	None	3 1/2	3 1/2
Walls	None	None	3 1/2
Conduction gains			
Windows and doors	5610	5610	5610
Walls	5780	5780	1740
Ceiling	14,680	4160	4160
Air leakage	2020	2020	2020
Sun gain through glass	2610	2610	2610
Sensible heat gain	30,700	20,180	16,140
Total heat gain	39,900	26,200	21,000

Reference: Manual 11, third edition

TABLE 2—WINDOW SHADING reduces Btuh heat gain substantially when used at logical points

	Windows	
	Shaded*	Unshaded
Conduction gains		
(Includes air leakage)	13,540	13,540
Sun gain through glass	2610	8920
Sensible heat gain	16,150	22,460
Total heat gain	21,000	29,200

* 3 ft 10 in. roof overhang on south, canvas awnings east and west.
Reference: Manual 11, third edition

TABLE 3—BUILDING orientation has a pronounced effect on Btuh heat gain of the residence

	Direction residence faces			
	North	East	South	West
Conduction gains				
(Includes air leakage)	13,540	13,540	13,540	13,540
Sun gain through glass	3360	12,550	2610	18,590
Total sensible heat gain	16,900	26,090	16,150	32,130
Total heat gain				
(Sensible plus latent)	22,000	32,600	21,000	41,800

Reference: Manual 11, third edition

He was speaking specifically of the improper and perhaps excessive use of glass in some apartment buildings, but his observation applies equally to residential structures.

It is generally true that good construction for economical heating is also good construction for economical cooling. When an engineer wishes to reduce heat flow, he usually thinks first of thermal insulation. This is as true in home building as it is in industry. In order to show how insulation reduces heat gain, let us consider the case of a typical one story, 1040 sq ft residence with a 3 ft 10 in. roof overhang on the south side and awning on the east and west sides during the summer.

Add Insulation Or Use Larger Unit?

Let us see what effect insulation has on the heat gain of this residence. In Table 1 the various factors affecting heat gain are presented. Note that conduction gains occur through the windows, doors, walls and ceiling, and as air leakage. In addition, there will be a sun gain through the various glass surfaces. The conduction gains through the windows are due to the outside temperature; the sun gains are due to solar radiation. If the walls and ceiling are uninsulated and the attic is ventilated, the design heat gain of the residence is almost 40,000 Btuh, in excess of three tons of refrigeration. If the ceiling is insulated, the heat gain is reduced to 26,000 Btuh, and insulating the walls reduces the heat gain to 21,000 Btuh. The cost of the insulation is approximately the price difference between the 3 ton and 2 ton cooling units, and the savings in operating costs for both heating and cooling become gravy.

Needs Vary for Window Shading

Another consideration is proper shading of the windows. In this particular house, the sun gain is relatively small because this shading was provided. What would happen if the windows were unshaded is shown in Table 2. If the roof overhang and the awnings were removed, the sun gain through glass would increase from 2600 Btuh to 8900 Btuh and the total heat gain would jump from 21,000 Btuh to 29,000 Btuh (see Table 2). A word of caution must be injected here, however, since no one method of window shading can be used under all conditions. In this house, the roof overhang is on the south where it serves as an effective shading device. It is much less effective when used on the west wall. The shadow line which would occur at 3 p.m. sun time on August 1 would be about 7 ft above the ground and thus well up on the windows. Later in the day, as the sun drops into the west, the roof overhang would be even less effective as a shading device for the west wall and windows. For

(Continued on page 108)

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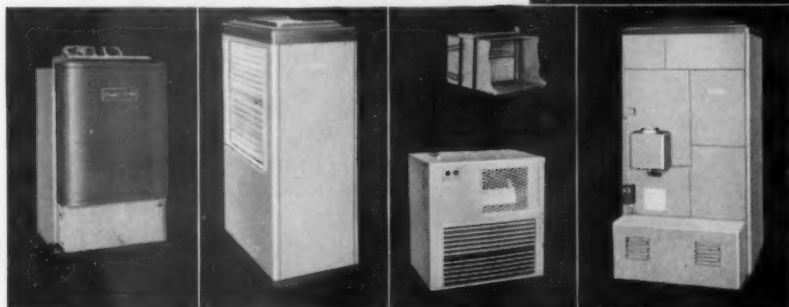
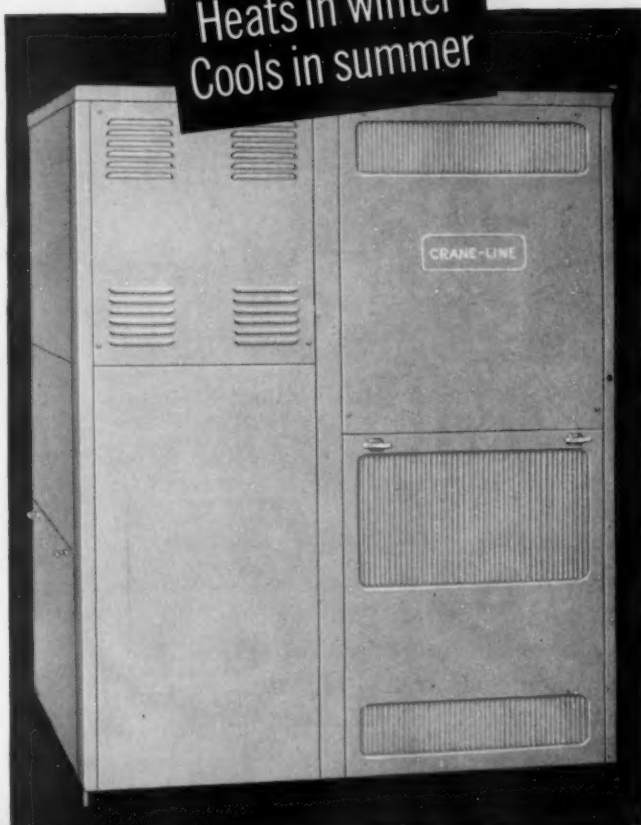
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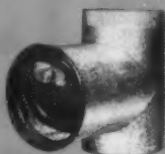
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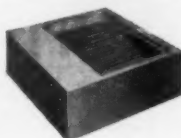
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COMPANY NAME

ADDRESS

CITY STATE

MY NAME POSITION

Humidity Control Related to Equipment Size

(Continued from page 104)

east and west exposures, therefore, either awnings or planting will be found to be the more effective shading devices.

Orientation Has Big Effect On Heat Gain

A mistake made by many project builders has been to calculate the heat gain of each floor plan once, without regard for the orientation of the house. The effect of this is illustrated in Table 3 by rotating the residence so that it faces each of the four main points of the compass. If the house faces north, the heat gain is 22,000 Btuh. When it faces east, the heat gain increases to almost 33,000 Btuh. When the house faces west, the heat gain is 41,800 Btuh, almost twice the heat gain of the structure as it actually stands. These variations in heat gain are produced by the changing effectiveness of the shading devices.

All this emphasizes both the importance of good construction for minimum heat gain and the importance of

calculating the heat gain for sizing the cooling unit.

Important as it is to have a cooling unit of adequate capacity, it is equally as vital to have a cooling unit that is not too big for the job. As a matter of fact, undersizing the cooling unit by as much as 15 percent is preferable to oversizing it, because of the factor of humidity control. A properly sized cooling unit will operate for relatively long periods of time during hot weather and will remove much greater quantities of water from the air than will an oversized unit which operates on short cycles. Since actual control of the humidity within the house is not maintained, much greater comfort due to lower humidity will result if the cooling unit operates on long cycles.

Only a few of the problems encountered in residential air conditioning have been mentioned here. They should serve to point out that the problems are different from those encountered in other phases of the industry. There is not one which cannot be solved, and in general, the common sense approach has proven to be the best one to rely upon.

FHA Gets New Slab Insulation and Duct Data

RESULTS OF A study made by the Building Research Advisory Board for the Federal Housing Administration on slab-on-ground residences indicate that a number of current practices of heating and building contractors are satisfactory. However, the published report includes a number of suggestions that will be included in new requirements for obtaining FHA approval for loans. One of the suggestions deals with reinforcement over ducts located in concrete slabs. The recommendation states, "Concrete above warm air ducts (2½ in. minimum thickness) if not otherwise reinforced, shall be reinforced with 10 ga. 6 × 6 mesh extending 18 in. into the normal thickness of the slab. Ducts which are crush resistant, non-corrosive and non-absorbent, such as glazed tile with sealed joints or transite pipe, need not be encased in concrete. All other ducts must be completely encased in concrete."

The report continues to explore causes and cures of problems occurring in slab floor houses. One such problem dealt with flooring materials placed over concrete floors. It has been found that some of the troubles which tended to place the blame on heat from a duct system in a slab were due to moisture leaving the concrete. The new recommendation is that "a minimum of 30 days be required after the slab has been laid before any flooring surface can be applied. Sixty days is recommended where practical."

Insulation of the slab at its perimeter also is stated in the new recommendations. The report states: "Slab perim-

eter must be insulated in its entirety. Insulation should be required to be non-capillary, not permanently harmed by wetting or harmed by contact with wet concrete mix, and not subject to damage by termites or fungi.

"For design temperatures of 10 below zero and insulation conductivity of 0.2 or 0.3 Btu per in. per sq ft per deg, the insulation shall be not less than ¾ in. in thickness. Where the conductivity rating is 0.4, the minimum thickness shall be not less than 1 in.

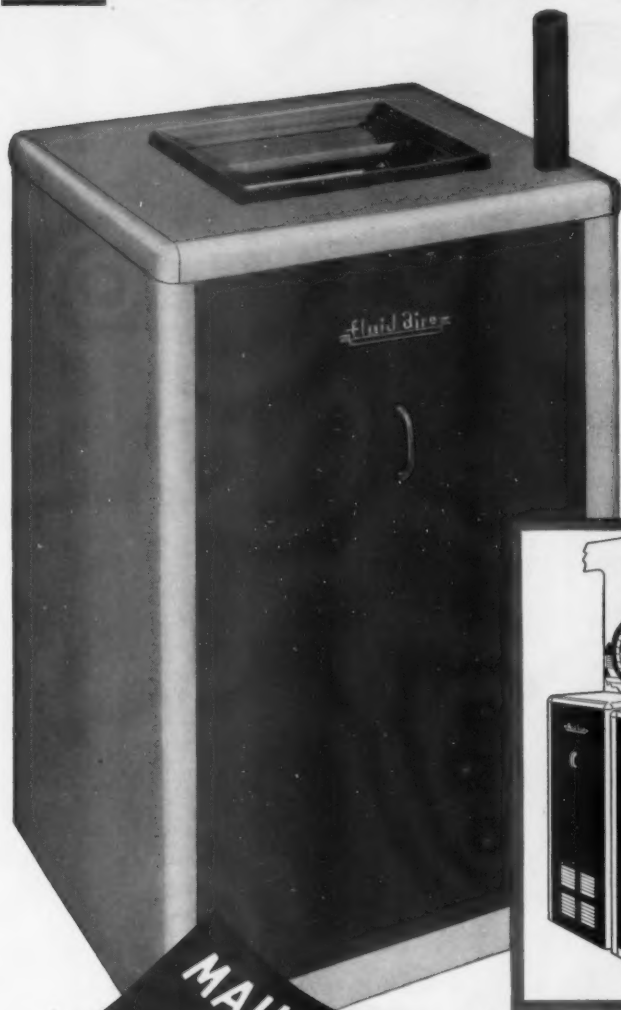
"If the highest known water table of a site is 2 ft or more below the outside grade, perimeter insulation may be placed in either a vertical or horizontal position. If the highest known water table is 4 ft or more below outside grade, it is generally recommended that perimeter insulation be placed in a vertical position.

"If the highest known water table is less than two ft below the outside grade, perimeter insulation must be placed in a horizontal or ell shaped position. An exception should be made if a special drainage system is provided to prevent moisture from reaching the insulation.

"A perimeter insulation placed in a horizontal position requires more length to be as effective as a vertically placed insulation.

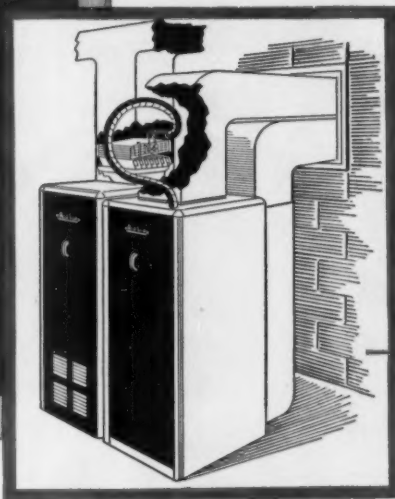
"A perimeter insulation placed against the outside of the foundation wall is considered by insulation experts to be theoretically a good location thermally. No completely suitable insulation material exists, however, for use in this way from the standpoint of strength and resistance to damage."

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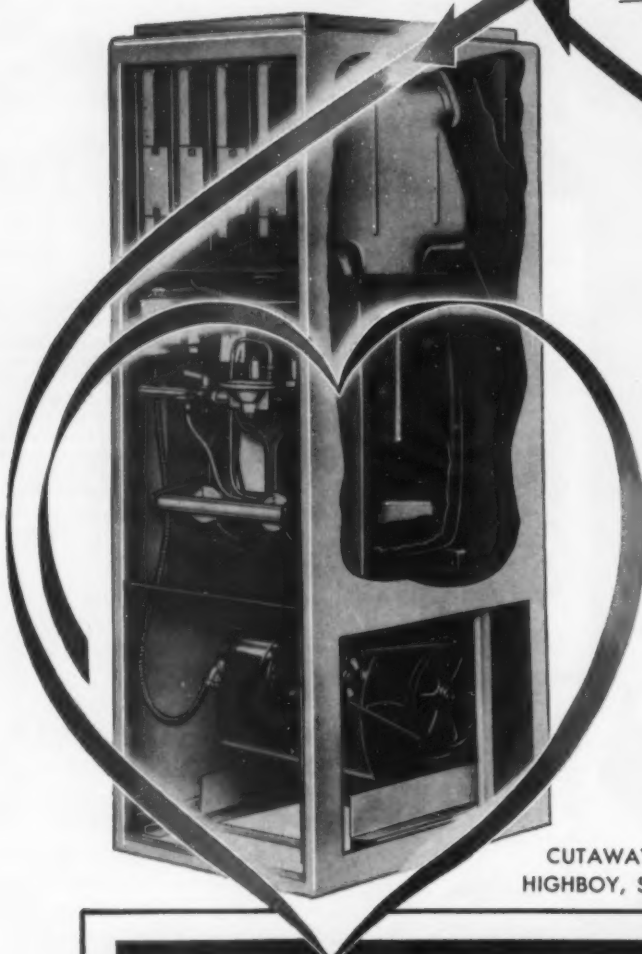
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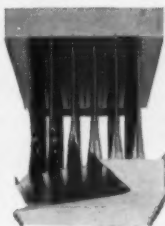
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The Norman Southerner is approved by A.G.A. as a central heating forced air furnace, and as a unit heater for use with natural, mixed, manufactured and LP gas.



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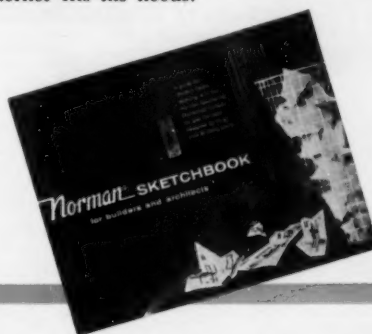
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Housing Census Heating Data

Baton Rouge, La. • Beaumont, Tex. • Memphis • Mobile • Raleigh
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SUGGESTIONS on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the November 1954 American Artisan. Localities covered in the reports are metropolitan

areas that are socially and economically integrated with the central city. Data for various areas has been reported regularly in American Artisan since May 1953. Additional reports will continue to appear regularly.

Types of Fuel Used in Centrally Heating Dwelling Units

	Standard Metropolitan Area									
	Baton Rouge, La.	Beaumont, Tex.	Memphis, Tenn.	Mobile, Ala.	Raleigh, N. C.	San Bernardino, Calif.	Scranton, Pa.	Springfield, Ohio	Stamford, Conn.	Tulsa, Okla.
East Baton Rouge Parish	Jefferson County	Shelby County	Mobile County	Wake County	San Bernardino County	Lackawanna County	Clark County	Fairfield County (Part)	Tulsa County	
All dwelling units	45,937	59,866	137,985	67,048	34,539	105,428	74,060	33,507	57,969	81,251
Number reporting heating equipment	40,935	55,645	131,155	61,310	32,570	83,735	71,090	32,280	53,730	76,905
Central heating	5,385	6,470	55,105	9,830	11,395	24,385	53,845	17,815	44,045	33,510
Coal	50	70	2,420	325	4,030	230	48,590	10,815	10,750	340
Wood	83	55	225	390	65	180	135	30	60	105
Utility gas	4,965	6,025	50,605	7,455	180	21,930	2,470	5,530	3,235	32,540
Bottled gas	320	100	255	640	60	480	210	55	200	150
Liquid fuel	25	80	820	850	6,265	1,050	575	1,045	28,250	30
Other fuel	95	115	555	120	750	395	1,275	240	1,215	135
Not reporting	45	25	225	50	45	120	590	100	335	210

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Baton Rouge, La. — East Baton Rouge Parish															
All occupied units	40,875	31,975	5,735	2,125	805	235	23,505	22,320	1,185	17,370	9,655	4,745	1,975	775	220
HEATING EQUIPMENT															
Central heating	5,371	4,454	479	275	114	49	3,830	3,708	122	1,541	746	372	275	114	34
Piped steam or hot water	1,395	1,020	158	75	91	49	742	700	42	651	320	131	75	91	34
Warm air furnace	3,978	3,434	321	200	23	...	3,008	3,008	80	890	426	241	200	23	...
Noncentral heating, with flue	5,562	4,462	790	150	160	...	2,699	2,565	134	2,863	1,897	656	150	160	...
Nonctrl. htng., without flue; or not htd.	27,770	21,214	4,186	1,675	509	186	15,568	14,692	876	12,202	6,522	3,490	1,525	479	186
Not reported	2,163	1,843	272	25	23	...	1,406	1,353	53	757	490	219	25	23	...
YEAR BUILT															
1945 or later	13,544	10,896	1,877	548	164	59	9,299	8,991	308	4,245	1,905	1,644	488	164	44
1940 to 1944	5,630	4,815	652	116	47	...	3,934	3,759	175	1,696	1,056	477	116	47	...
1939 or earlier	20,258	15,119	3,071	1,345	547	176	9,690	9,017	673	10,568	6,102	2,518	1,255	517	176
Not reported	1,442	1,144	135	116	47	...	581	552	29	861	592	106	116	47	...

Standard Metropolitan Area of Beaumont, Tex. — Jefferson County

All occupied units	54,890	41,815	7,435	2,890	1,905	845	31,825	29,535	2,290	23,065	12,280	5,575	2,550	1,820	840	
HEATING EQUIPMENT																
Central heating	6,421	5,521	618	164	93	25	4,665	4,427	238	1,756	1,094	413	136	93	20	
Piped steam or hot water	2,743	2,146	403	96	93	5	1,647	1,521	126	1,096	625	310	68	93	...	
Warm air furnace	3,678	3,375	215	88	...	20	3,018	2,906	112	660	469	103	68	...	20	
Noncentral heating, with flue	6,456	4,805	921	438	210	82	3,352	3,064	288	3,104	1,741	661	410	210	82	
Nonctrl. htng., without flue; or not htd.	40,696	30,447	5,737	2,196	1,578	738	23,068	21,361	1,707	17,628	9,086	4,398	1,913	1,493	738	
Not reported	1,311	1,038	159	91	23	...	737	681	56	574	357	103	91	23	...	
YEAR BUILT																
1945 or later	10,674	9,640	579	265	165	25	7,066	6,986	80	3,608	2,654	522	242	165	25	
1940 to 1944	8,009	6,404	499	198	552	356	4,361	4,219	142	3,648	2,185	385	198	524	356	
1939 or earlier	33,539	23,777	6,080	2,274	1,077	331	19,538	17,533	2,005	14,001	6,244	4,449	1,957	1,020	331	
Not reported	2,659	1,991	277	154	110	127	851	794	57	1,808	1,197	220	154	110	127	

(Continued on page 116)

LEADER IN ITS FIELD

Outperforms

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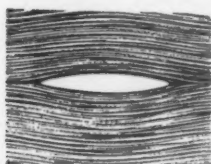
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Shown above is the Airfoil Model No. 270. Features 2 sets of Airfoil louvers plus the special design concealed support.

TITUS

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Airfoil Grilles feature the **FIRST REALLY NEW IDEA** in air conditioning outlet design — the streamlined, smooth-as-glass *Airfoil Louver*. This louver—adapted from the aerodynamically perfect airfoil section of an airplane—makes possible matchless air diffusion and distribution. Airfoil Grilles handle higher air velocities with minimum turbulence, minimum noise and perfect draft-free performance.

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Enthusiastic contractors, architects and engineers—Nation-wide—declare these new *Titus Airfoil Grilles* outmode all others.

Their design handles air diffusion and distribution like no other grille ever has.

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Return Air Grilles	Special Made-to-Order Grilles
Return Air Registers	Installation Frames and Accessories
Volume Controllers	High Velocity Factory Outlets
Ceiling Outlets	Toilet Exhaust Registers
Ornamental Grilles	Grilles for Convactor Radiators
Door Ventilators	
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Easy to handle. This workman is installing a Monel batten seam roof on the tower of the Liberal Arts Building, St.

John's University, Queens County, New York. Note his tools—the same ones used for handling any roofing metal.

How many Monel roofing jobs have you had lately?

You should have had a fair share. For more and more architects specify Monel® roofing these days.

Are you making a bid for this profitable business? Or do you let your competitors have it without a murmur?

Give them some real competition! Put in your bid even if you've never handled a Monel nickel-copper alloy roofing job in your life.

Working with Monel is hardly different from handling any roofing metal. There are no special fabricating techniques to learn. Just cut . . . bend or form . . . and install.

Following good roofing practice, you pre-tin the sheet at your shop. Use a heavy soldering iron for installation, and be sure to keep it *hot*. Gives you as neat and watertight a seam as you'd ever want to see!

So don't let those Monel nickel-cop-

per alloy roofing jobs slip through your fingers. Be ready to quote on the ones in your locality. On office buildings. Public buildings. Churches. Schools. Factories. Even private homes. *Anywhere that somebody wants long-lasting sheet metal work.*

Write us for a copy of our free bulletin, *Basic Application Data — Monel Roofing Sheet*. It gives you just the kind of information you need to do work you'll take pride in pointing out to other prospects. Send for this bulletin today. A postcard will do fine. Ask for "Roofers' Bulletin."

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The International Nickel Company, Inc.
67 Wall Street New York 5, N. Y.



One of the many Monel jobs going on. On this college building, batten seam roofing, sheathing on the tower, and through-wall flashings are of long-lasting, corrosion-resisting Monel. Architect: Henry V. Murphy, Brooklyn, N. Y. General contractor: Veit & Company, Inc., Flushing, N. Y. Monel sheet metal work: John Schneider Roofing Contractors, Inc., Brooklyn.



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PLIOTRON is much more than an ordinary filter. Its plastic filter medium actually attracts and captures up to 400% more fine dust and dirt particles than ordinary filters. Moreover, it's easily installed—slips into any standard holder—and it's completely washable — can be restored to like-new efficiency with a quick bath.

PLIOTRON costs more than the average filter, but the difference is more than justified by the added cleanliness and added service it will give your customers. It's a product you'll take extra pride and extra profit in selling. For more information, write to Goodyear, Pliotron Sales Dept., Akron 16, Ohio.



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Housing Census Heating Data

(Continued from page 112)

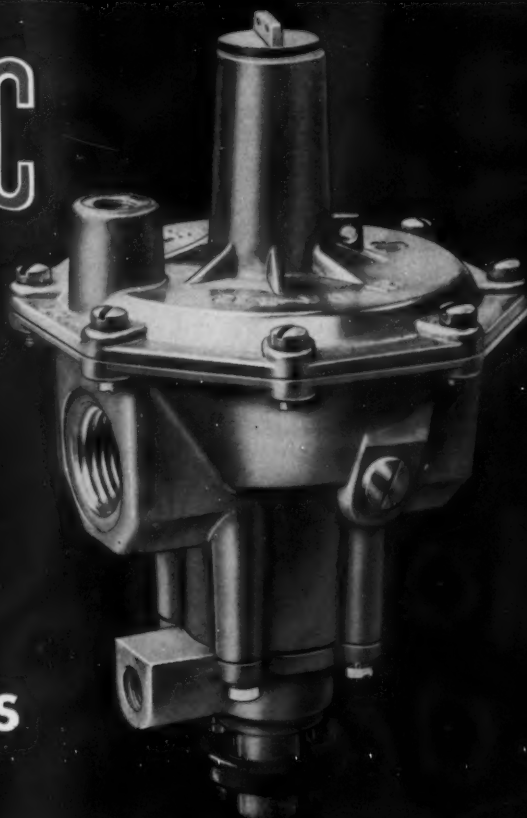
Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Memphis, Tenn. — Shelby County															
All occupied units	125,160	68,215	29,425	10,725	8,170	8,625	60,505	51,135	9,370	64,655	17,080	22,030	9,260	7,765	8,520
HEATING EQUIPMENT															
Central heating	53,739	30,863	10,254	4,198	3,679	4,745	31,893	27,654	4,239	21,846	3,209	6,941	3,522	3,499	4,675
Piped steam or hot water	19,605	8,152	3,093	2,153	2,492	3,715	8,395	7,075	1,520	11,010	1,077	1,996	1,843	2,402	3,692
Warm air furnace	34,134	22,711	7,161	2,045	1,187	1,030	23,298	20,579	2,719	10,836	2,132	4,945	1,679	1,097	983
Noncentral heating, with flue	47,798	25,574	13,152	3,916	2,599	2,557	18,473	15,378	3,095	29,325	10,196	10,609	3,522	2,464	2,534
Nonctrl. htng., without flue; or not htd.	21,002	9,846	5,671	2,465	1,807	1,213	8,677	6,785	1,892	12,325	3,061	4,225	2,099	1,739	1,201
Not reported	2,616	1,929	348	145	85	109	1,461	1,317	144	1,155	612	255	117	62	109
YEAR BUILT															
1945 or later	25,043	18,203	4,139	663	1,205	833	16,070	15,218	852	8,973	2,985	3,287	663	1,205	833
1940 to 1944	10,720	6,627	1,849	123	509	1,612	6,649	5,991	658	4,071	636	1,217	123	509	1,586
1939 or earlier	85,950	41,327	22,700	9,688	6,269	5,966	36,392	28,778	7,614	49,558	12,549	16,955	8,277	5,864	5,913
Not reported	3,447	2,062	734	250	187	214	1,395	1,150	245	2,052	912	569	196	187	188
Standard Metropolitan Area of Mobile, Ala. — Mobile County															
All occupied units	59,280	42,115	9,455	4,540	2,405	765	31,135	28,830	2,305	28,145	13,285	7,735	4,080	2,315	730
HEATING EQUIPMENT															
Central heating	9,245	7,023	961	793	415	53	6,260	5,842	418	2,985	1,181	629	745	400	30
Piped steam or hot water	981	622	89	213	57	...	650	580	70	331	42	50	197	42	...
Warm air furnace	8,264	6,401	872	580	358	53	5,610	5,262	348	2,654	1,139	579	548	358	30
Noncentral heating, with flue	23,484	16,626	4,005	1,549	878	426	10,367	9,921	446	13,117	6,705	3,653	1,470	863	426
Nonctrl. htng., without flue; or not htd.	25,448	17,655	4,298	2,160	1,049	286	13,938	12,552	1,386	11,510	5,103	3,501	1,843	989	274
Not reported	1,099	808	190	38	63	...	568	513	55	531	295	151	22	63	...
YEAR BUILT															
1945 or later	9,392	7,818	994	341	158	81	6,529	6,370	159	2,863	1,448	868	308	158	81
1940 to 1944	14,839	9,696	2,482	1,442	868	351	7,683	7,440	243	7,156	2,256	2,305	1,376	868	351
1939 or earlier	33,879	23,961	5,704	2,662	1,247	305	16,595	14,743	1,852	17,284	9,218	4,358	2,301	1,157	270
Not reported	1,165	637	274	95	132	27	526	275	51	839	362	225	95	132	27
Standard Metropolitan Area of Raleigh, N.C. — Wake County															
All occupied units	26,995	17,625	4,805	2,100	1,600	865	12,475	10,975	1,500	14,520	6,650	3,605	1,855	1,555	855
HEATING EQUIPMENT															
Central heating	10,851	5,951	1,855	1,193	1,014	838	5,995	5,128	867	4,856	823	1,163	1,063	969	838
Piped steam or hot water	5,157	1,799	733	970	834	821	1,850	1,440	410	3,307	359	433	905	789	821
Warm air furnace	5,694	4,152	1,122	223	180	17	4,145	3,688	457	1,549	464	730	158	180	17
Noncentral heating, with flue	14,777	10,684	2,765	770	541	17	5,811	5,259	552	8,966	5,425	2,327	656	541	17
Nonctrl. htng., without flue; or not htd.	963	801	69	68	23	5	530	502	28	433	296	46	68	23	...
Not reported	403	193	114	68	23	5	138	87	51	265	106	68	68	23	...
YEAR BUILT															
1945 or later	6,003	2,330	711	388	574	...	3,744	3,616	128	2,259	714	583	388	574	...
1940 to 1944	1,983	1,590	184	138	72	...	1,255	1,205	51	728	385	133	138	72	...
1939 or earlier	18,363	11,173	3,831	1,574	930	855	7,235	5,924	1,311	11,128	5,249	2,810	1,329	885	855
Not reported	637	533	80	...	24	...	231	231	...	406	302	80	...	24	...
Standard Metropolitan Area of San Bernardino, Calif. — San Bernardino County															
All occupied units	78,775	64,810	8,315	3,140	1,580	930	48,220	45,670	2,550	30,555	19,140	6,295	2,770	1,470	880
HEATING EQUIPMENT															
Central heating	22,683	19,516	1,900	595	343	329	16,418	15,727	691	6,265	3,789	1,353	487	327	309
Piped steam or hot water	3,106	2,416	359	75	117	139	1,900	1,706	194	1,206	710	216	44	117	119
Warm air furnace	19,577	17,100	1,541	520	226	190	14,518	14,021	497	5,059	3,079	1,137	443	210	190
Noncentral heating, with flue	25,175	20,937	2,654	815	436	333	15,764	14,973	791	9,411	5,964	1,941	753	420	333
Nonctrl. htng., without flue; or not htd.	28,741	22,566	3,532	1,655	802	186	14,890	13,932	958	13,851	8,634	2,843	1,485	723	166
Not reported	2,179	1,795	228	75	...	81	1,153	1,041	112	1,026	754	157	44	...	71
YEAR BUILT															
1945 or later	21,593	19,249	1,721	305	245	73	16,148	15,604	544	5,445	3,645	1,202	280	245	73
1940 to 1944	9,429	6,722	1,513	839	184	171	5,181	5,099	82	4,248	1,623	1,431	839	184	171
1939 or earlier	43,717	35,577	4,685	1,895	949	611	24,671	22,989	1,682	19,046	12,588	3,348	1,550	949	611
Not reported	3,875	3,260	397	102	92	24	2,060	1,978	82	1,815	1,282	315	102	92	24

(Continued on page 120)

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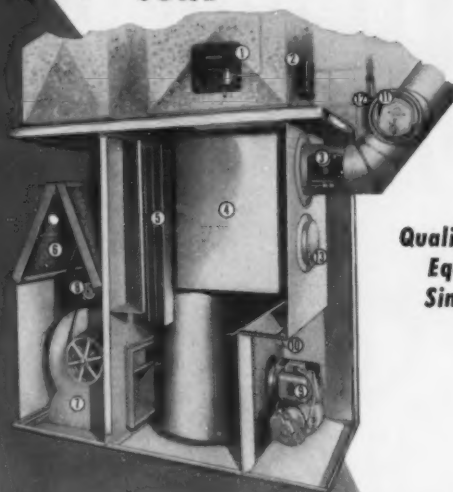
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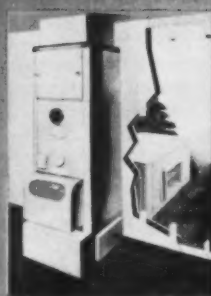
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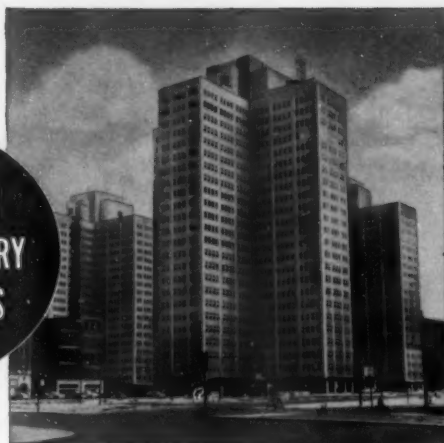
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Unit with
Remote Air
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Condenser

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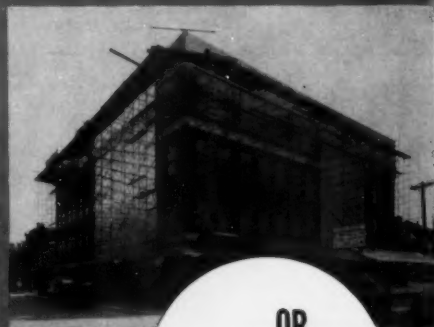


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Housing Census Heating Data

(Continued from page 116)

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling units	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Scranton, Pa. — Lackawanna County															
All occupied units	68,830	29,910	25,675	9,905	2,800	540	35,120	23,355	11,765	33,710	6,555	16,220	7,880	2,545	510
HEATING EQUIPMENT															
Central heating	51,286	23,117	18,854	6,784	2,102	429	28,328	18,790	9,538	22,958	4,327	11,149	5,155	1,898	429
Piped steam or hot water	43,646	19,571	15,902	5,894	1,891	388	24,089	15,936	8,153	19,557	3,635	9,356	4,474	1,704	388
Warm air furnace	7,640	3,546	2,952	890	211	41	4,239	2,854	1,385	3,401	692	1,793	681	194	41
Noncentral heating, with flue	11,519	4,502	4,465	2,006	465	81	4,747	3,117	1,630	6,772	1,385	3,192	1,703	431	61
Nonctrl. htng., without flue; or not htd.	4,853	1,704	2,050	933	146	20	1,640	1,098	542	3,213	606	1,618	840	129	20
Not reported	1,174	589	307	182	86	10	406	351	55	768	238	262	182	86	...
YEAR BUILT															
1945 or later	665	508	131	26	...	...	473	421	52	192	87	79	26	...	...
1940 to 1944	208	132	26	26	24	...	158	132	26	50	...	...	26	24	...
1939 or earlier	66,111	28,577	24,780	9,539	2,703	512	33,619	22,196	11,423	32,492	6,381	15,585	7,596	2,448	482
Not reported	1,846	693	738	314	73	28	870	606	264	976	87	556	232	73	28
Standard Metropolitan Area of Springfield, O. — Clark County															
All occupied units	29,835	18,240	7,745	2,390	1,185	275	16,640	14,065	2,575	13,195	4,175	5,580	2,030	1,140	270
HEATING EQUIPMENT															
Central heating	16,771	10,518	4,191	1,247	669	146	10,549	8,904	1,645	6,222	1,614	2,755	1,038	669	146
Piped steam or hot water	2,107	681	636	368	297	125	830	642	188	1,277	39	486	330	297	125
Warm air furnace	14,664	9,837	3,555	879	372	21	9,719	8,262	1,457	4,945	1,575	2,269	708	372	21
Noncentral heating, with flue	11,555	7,094	2,938	978	441	104	5,528	4,731	797	6,027	2,363	2,338	826	396	104
Nonctrl. htng., without flue; or not htd.	1,023	333	453	142	74	21	364	235	129	659	98	324	142	74	21
Not reported	477	291	162	24	...	...	193	193	...	284	98	162	24	...	...
YEAR BUILT															
1945 or later	3,050	2,726	137	153	...	34	2,359	2,283	76	691	443	79	135	...	34
1940 to 1944	1,675	1,144	422	86	23	...	1,033	986	47	642	158	393	68	23	...
1939 or earlier	24,575	14,070	7,134	2,065	1,070	236	13,038	10,654	2,384	11,537	3,416	5,056	1,759	1,070	236
Not reported	484	299	52	86	47	...	159	141	18	325	158	52	68	47	...
Standard Metropolitan Area of Stamford, Conn. — Fairfield County (Part)															
All occupied units	52,920	28,970	12,190	5,650	3,975	2,135	30,215	24,030	6,185	22,705	4,940	7,225	4,790	3,685	2,065
HEATING EQUIPMENT															
Central heating	42,305	25,569	9,321	3,471	2,241	1,703	27,103	22,074	5,029	15,202	3,495	5,056	2,915	2,075	1,661
Piped steam or hot water	32,896	19,242	6,950	3,031	2,065	1,608	20,405	16,539	3,866	12,491	2,703	3,691	2,576	1,927	1,594
Warm air furnace	9,409	6,327	2,371	440	176	95	6,698	5,535	1,163	2,711	792	1,365	339	148	67
Noncentral heating, with flue	6,882	1,793	2,094	1,584	1,142	269	1,682	977	705	5,200	816	1,700	1,356	1,059	269
Nonctrl. htng., without flue; or not htd.	1,951	516	534	413	443	45	483	260	223	1,468	256	403	362	402	45
Not reported	1,780	1,089	242	183	148	118	944	716	228	836	373	67	158	148	90
YEAR BUILT															
1945 or later	6,292	4,490	676	508	304	314	4,419	3,988	431	1,873	502	357	460	240	314
1940 to 1944	3,148	2,444	314	...	278	112	2,544	2,268	276	604	176	102	...	214	112
1939 or earlier	40,575	20,784	10,372	4,925	3,125	1,369	22,214	17,073	5,141	18,361	3,711	6,204	4,113	2,964	1,369
Not reported	2,906	1,256	828	215	267	339	1,040	704	336	1,866	552	562	216	267	269
Standard Metropolitan Area of Tulsa, Okla. — Tulsa County															
All occupied units	74,470	54,980	9,085	4,550	2,970	2,885	44,535	41,270	3,265	29,935	13,710	6,580	4,035	2,785	2,825
HEATING EQUIPMENT															
Central heating	32,951	27,375	2,317	1,349	392	1,518	25,255	24,100	1,155	7,696	3,275	1,404	1,193	346	1,478
Piped steam or hot water	4,353	2,164	376	304	183	1,326	1,908	1,699	209	2,445	465	189	282	183	1,326
Warm air furnace	28,598	25,211	1,941	1,045	209	192	23,347	22,401	946	5,251	2,810	1,215	911	163	152
Noncentral heating, with flue	14,612	9,949	2,027	1,026	916	694	7,898	6,865	1,033	6,714	3,084	1,278	824	854	674
Nonctrl. htng., without flue; or not htd.	25,549	16,852	4,505	2,088	1,561	543	10,763	9,733	1,030	14,786	7,119	3,709	1,931	1,484	543
Not reported	1,361	806	236	87	102	130	621	574	47	740	232	189	87	102	130
YEAR BUILT															
1945 or later	13,923	12,009	859	825	203	27	10,650	10,477	173	3,273	1,532	686	825	203	27
1940 to 1944	6,291	5,979	253	59	...	...	5,267	5,065	202	1,024	914	51	59	...	...
1939 or earlier	52,316	35,864	7,818	3,370	2,641	2,623	28,030	25,220	2,810	24,286	10,644	5,716	2,887	2,456	2,583
Not reported	1,940	1,125	156	297	127	235	588	507	81	1,352	618	127	265	127	215

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Auto flo

Fuel Oil Filters



Best for the JOB!
Best for YOU!

More features . . . better heat for your customers . . . more profits for you. Double filter action positively protects against clogged nozzles and lines, eliminates call-backs.

Leakproof one-piece construction, reinforced bolt spud, guaranteed permanently rustproof. Hexagon extensions . . . easiest of all to install . . . at either tank or burner.

It's sure to satisfy. Use Auto-flo Fuel Oil Filters on every installation, gravity or pressure type burners—the F-300 Standard, or the King Size F-400 for over-standard and commercial applications.



ASK YOUR WHOLESALE
ABOUT THE

Auto flo **AUTOMATIC HUMIDIFIER**

AUTO-FLO CORP., 14590 Schaefer, Detroit 27, Mich.

Please send me full information on Auto-Flo:

☐ Fuel Oil Filters. ☐ "100" Automatic Humidifier.

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ON THE *Sky* LINE -

NOTHING SERVES LIKE

HUSSEY COPPER

ROOF DRAINAGE
PRODUCTS



- Copper Sheet Metal
- Rolled Copper Flashing
- Majestic 3-Way Thru Wall Copper Flashing
- Copper Ridge Roll
- Copper Conductor Pipe
- Copper Eave Troughs
- Roof Drainage Accessories
- Copper Tubing
- Copper and Brass Pipe
- Copper Nails



7 CONVENIENT WAREHOUSES

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CLEVELAND (3) 5318 St. Clair Ave.

NEW YORK (13) 140 Sixth Ave.
CHICAGO (18) 3900 N. Elston Ave.
CINCINNATI (2) 424 Commercial Square

ST. LOUIS (3) 1632 Delmar Blvd.
PHILADELPHIA (30) 1632 Fairmount Ave.

Nowhere do the advantages of copper serve so distinctively as in the roof drainage systems of fine homes and buildings. HUSSEY has been one of America's best known names in copper roofing products for over 100 years... a reliable reputation you can put to work on your *next* job. In quantity, order direct from the mill or immediate job lot service from any of seven conveniently located warehouses listed below.

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(Division of Copper Range Co.)

ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH 19, PA.

Big Sales Possibilities and Extra Profit - in REPLACEMENT BUSINESS

**Mr. Dealer,
Here is an
answer to your
Pulley & Belt
Problems**

Zatko **ONE PIECE Stamped Steel Pulleys**

ONE PIECE

- for Greater Strength
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Zatko Quality Pulleys matched with Zatko Quality Belts offer a lot of extra PROFIT for YOU.



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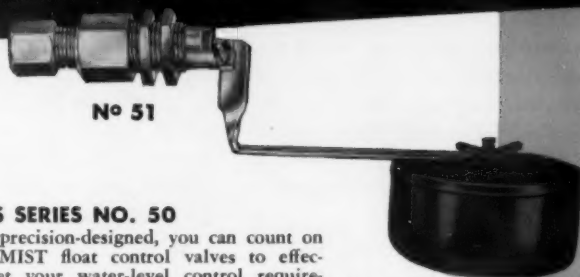
or write for particulars of the unusual sales opportunities.

**FOR BIG SALES and LONG PROFITS —
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Replacement Parts Inc.
22408 Lake Shore Blvd. Euclid 23, Ohio

For dependable water level control use **MAID-O'-MIST FLOAT CONTROL VALVES**

Thrifty answer to limited space in
HUMIDIFIERS **AIR CONDITIONERS**
PAN FILLERS **AIR WASHERS**



No. 51

FAMOUS SERIES NO. 50

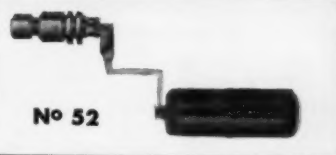
Compact, precision-designed, you can count on MAID-O'-MIST float control valves to effectively meet your water-level control requirements. An acknowledged leader in its advanced engineering, they give faithful performance.

FLOAT CONTROL VALVE No. 51

Only 5 3/4" long overall, including copper float 2 1/8" in diameter x 1 1/4" deep. Stem and body made of brass . . . valve seat of hard nylon, protected with fine metal screen. Can be fitted in 9/16" hole or screwed directly into tapped opening. Up to 85 lbs. pressure; 1/2 gal. per minute at 50 lb. pressure.

No. 52

Similar to No. 51, but designed for 1 gal. per minute capacity at 50 lbs. pressure, with pressures to 125 lbs. Overall length, 8", with 1 1/2" x 4 1/8" long float.



No. 52

No. 59

Valve is vertically mounted with special bracket to mount on reservoir or pan well above water line. Just 5" long.

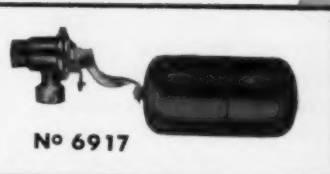


No. 59

No. 6917

Series Diaphragm Valves

Heavy duty, large capacity water level controls, rugged and strong. Capacities 1 1/4 gal. to 6 gal. per minute.



No. 6917

Get full information from your jobber or write for catalog today!



MAID-O'-MIST, Inc.
3217 NORTH PULASKI ROAD • CHICAGO 41, ILL.

What Is 'Satisfactory' Performance of Contract?

It's an ambiguous term as evidenced by contradictory court decisions. The key seems to be in whether judgment should be based on the individual customer's opinion or on some predetermined "reasonable" standards

PROVIDED IN A CONTRACT which was recently before one of the courts of a western state was that a subcontractor should perform his agreement "to the full and complete satisfaction of the contractor and of the architect or owner."

In an ensuing lawsuit brought under this subcontract for damages on the ground that performance had not been satisfactory, the court said, "This means satisfaction to a reasonable person."

Were this the only interpretation by the courts of the word "satisfactory" the lot of a contractor or dealer would be simple. But definitions vary with courts and circumstances.

Need Evidence of Good Faith

Another interpretation was made in litigation over the sale of equipment under a stipulation for payment if the equipment should "do good and satisfactory work." Here the court said:

"Where . . . the article is one which is ordinarily desirable only on account of its commercial value or the mechanical fitness or adaptability as a labor saving device, the buyer has usually been held to a stricter liability though not to the full measure of the obligation of the purchaser under an ordinary express or implied warranty.

"It is the duty of such a purchaser to give the thing purchased a reasonable trial. Having done so if it does not work to his satisfaction he may refuse to keep and pay for it, pro-

viding only that he acts in good faith and is honestly dissatisfied and in such cases the fact that others would regard the article purchased as good and satisfactory or that it worked well in their hands, would be immaterial."

In the contract for installation of a heating and ventilating system in a western school building the agreed price was payable when the system was "completed, tested and found to do its work satisfactorily and in accordance with the contract."

Contrary to the definition of the word "satisfactory" by some other courts it was asserted by the Supreme Court of that state:

"The natural inference from the language in a sales contract stipulating that the subject thereof shall be of a specified character and be accepted and paid for only upon its proving satisfactory, is that the person to be satisfied is the purchaser and that the words 'to the purchase' or some equivalent words after the word 'satisfactory' are to be regarded as a part of the contract by reasonable if not necessary implication."

Customer Is the Judge

From a comparison of two other court decisions involving contracts employing the term "satisfactory" as a yardstick in determination of the performance of the agreement, the uncertainty in definition of this term becomes apparent.

In one instance an artist had been employed by a woman to create a

bust of her deceased husband. The artist was to be paid \$150 providing she was satisfied with the work. The completed bust was admittedly well done and conformed to her instructions but it failed to "satisfy" her. In its refusal to permit the artist to recover, the court said:

"Whether the contract is wise or unwise, reasonable or unreasonable, is ordinarily an immaterial inquiry. The simple inquiry is, what is the contract. In this case the artist undertook to make a bust which would be satisfactory. She was not satisfied with it. The artist has not yet, then, fulfilled his contract. It is not enough to say that she ought to be satisfied with it and that her dissatisfaction is unreasonable. She and not the court is entitled to judge of that. The contract was not to make one that she ought to be satisfied with but to make one that she would be satisfied with. It may have been unwise for the artist to make such a contract but having made it he is bound by it."

Opposite View Reflected

The other instance involved a contract made for the purchase of equipment with the provision that if the equipment failed to "work satisfactorily," the contract should be cancelled. Here the court adopted a different definition of this word:

"The contract related to an article of merchandise to be used for purely business purposes. It was not intended to be left to the whim or caprice altogether, or to the good faith of the purchaser to say whether the goods were satisfactory. Under the circumstances the term 'satisfactory' may be held to mean 'satisfactory' to a reasonable man."

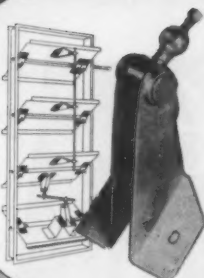
[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

DURO-DYNE

makes you the lowest bidder

When you've got to figure tight—when a "pennies per unit" lower bid on a ductwork section, damper or control will clinch the contract...but where quality cannot be sacrificed, investigate Duro-Dyne.

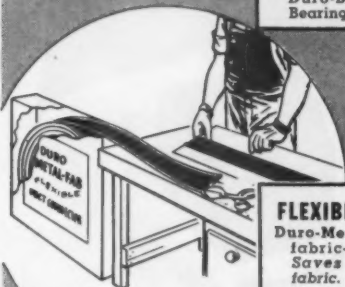
More than 150 Duro-Dyne products for the warm air and ventilating fields save you time and labor, keep your fabrication, assembly and installation costs way down, help you figure lower on jobs. Quality is maintained or, in many cases, improved.



NEVA BIND DURO-BLADE KIT

Precision Engineered Damper Hardware

Unique 4-way adjustability permits smoothly operating, absolutely non-binding louvre dampers to be made quickly with little care and no alignment afterward. Kit consists of 1 Neva Bind Duro-Bracket, 1 pair self oiling Duro-Bushings and 1 pair Duro Bearings.

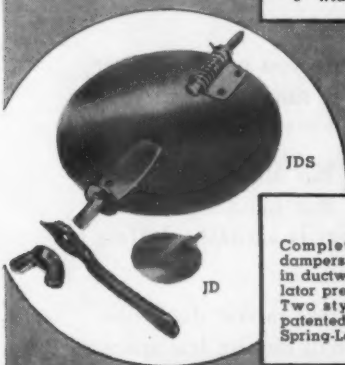


FLEXIBLE CONNECTOR PRODUCTS

Duro-Metal-Fab—Preassembled metal-to-fabric-to-metal—*Double-Loc Seamed*. Saves expense of attaching metal to fabric. Available in 100 ft. and 50 ft. rolls.

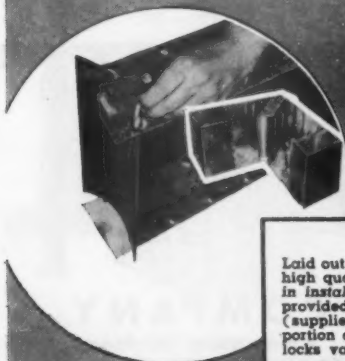
Econ-O-Fab—Lower price, same construction and quality as Duro-Metal-Fab, for residential and lighter gauge ductwork.

Duct Fabric—Quality fabrics without metal. 100 ft. rolls of 6" or 10" wide canvas, 6" wide asbestos and 6" wide neoprene.



JIFFY DAMPER

Complete, prefabricated, inexpensive dampers ready for immediate installation in ductwork. Consists of famous Jiffy Regulator preattached to galvanized iron blade. Two styles available: JDS Series with patented Spring-Loc. JD Series — without Spring-Loc.



DURO-VANE-RAIL

Laid out and punched side rails for making high quality air turning vanes. Saves 50% in installed costs. Insert vanes in notches provided in Duro-Vane-Rail. Place chisel (supplied free with DVR) on protruding portion of vane in slot. One blow securely locks vane to rail.

Here is a partial list of Duro-Dyne's large, varied line:



JIFFY REGULATOR



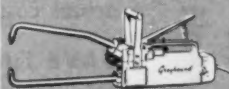
DIAL DAMPER REGULATOR



UNXLD DAMPER QUADRANT



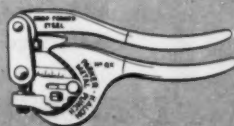
HEAVY DUTY and BALL BEARING DAMPER QUADRANTS



PORTABLE SPOT WELDER



DAMPER ROD CLIP



OX METAL HAND PUNCH



XX METAL BENCH and HAND PUNCH

Write us for literature or see your distributor.

DURO-DYNE CORPORATION

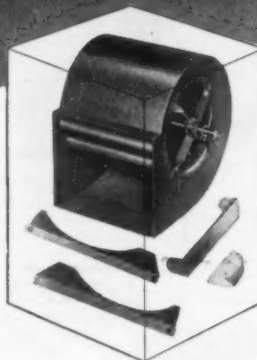
800-B Third Ave., New Hyde Park, New York



This Wraps It Up in One Neat Package!

Brundage UNIVERSAL BLOWERS

Meets up to 80% of your applications



MEASURE THE DIRECT ADVANTAGES IN YOUR PLANT

SAVE MONEY. Order the blower size you need in larger quantities. Your ordering procedure is simplified and your actual cost per unit is lower.

SAVE TIME. Not only in ordering, but all through your manufacturing operations, you'll find that handling and installation is faster . . . saving time that is actually dollars in your pocket.

CUT YOUR INVENTORIES. You'll free capital that's normally tied up in inventory and stock will require less space. Brundage Universal Blowers pay big dividends at every step of the way.

YOUR SAMPLE BLOWER is just a phone call away. Ask for the sizes you want and prove Brundage superiority to your own satisfaction in your own laboratory.



*Each Universal
Blower provides 8
discharge positions!*

THE BRUNDAGE COMPANY
North Park St. Kalamazoo, Michigan

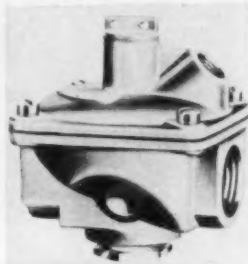
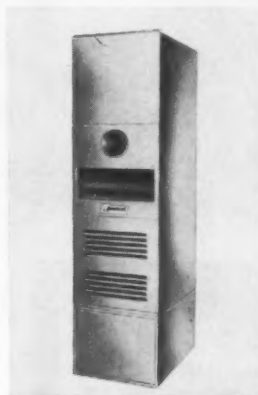
Telephone 2-0251

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the application of these products. For additional product information which is available, see this month's New Literature department

Counterflow Furnace with Cooling Unit

MODEL FDSC gas fired furnace in 80,000, 100,000 and 120,000 Btuh input sizes with matching compartment for cooling coil which can be included in original installation or added later — Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., 2375 Dorr St., Toledo 1, O. Cooling section which is also the base of the unit is 16 in. high. Air cooled compressor-condenser unit is installed outside the house. Burners are elevated from the floor, away from lint and dust; components and controls are accessible from the front.



Above: Pressure regulator

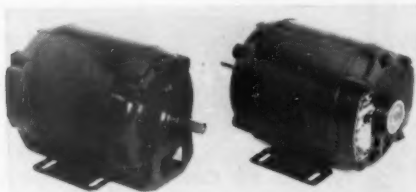
Left: Gas fired furnace

Angle Body Pressure Regulator

MODEL V300D LOW PRESSURE regulator of angle body type designed to maintain uniform pressure to gas fired appliances and utilize all commercially available gases—General Controls Co., 801 Allen Ave., Glendale 1, Calif. Unit can be mounted in any position. Bottom inlet-side outlet unit can also be used as an elbow in the manifold, the manufacturer reports.

48 Frame Motors

LINE OF 1/20 to 1/3 hp 48 frame motors with high pressure cast aluminum end brackets—Century Electric Co., 1806 Pine St., St. Louis 3, Mo. Also featured



are integrally cast cluster type aluminum fan, square

stator iron space for cooling air to pass, "drip proof" frame and rigid or cushion base.

Ceiling Air Diffuser

RESTYLED "KNO-DRAFT" residential ceiling air diffuser with capacity increased to more than 750 cfm — Connor Engineering Corp., Shelter Rock Lane,



Danbury, Conn. Addition of 10 and 12 in. diffuser increases capacity and makes unit adaptable to larger homes, stores and offices, the company reports. Diffuser collar now fits inside round duct; sponge rubber gasket is said to provide positive air seal.

Throatless Shear

ELECTRIC POWERED throatless shear designed for cutting any shape in metal up to 10 ga. mild steel—Beverly Shear Mfg. Co., 3004 W. 111th St., Chicago.



Shear has base and supporting column which may be removed for use as bench shear; cutter head imparts downward-forward motion to upper blade which shears the metal. Operator can use both hands to feed work; sheet may be turned in any direction due to throatless design. Unit is powered by 60 cycle, 120

(Continued on page 130)

I switched to Typhoon

says S. G. Taylor, Taylor Refrigerator Co.
Des Moines, Iowa

"... because we found out that Typhoon gives full cooperation all along the line... from the president's office to the shipping dock. We particularly like the warm, friendly atmosphere that exists between the Typhoon organization and us. They go all out to serve us."



I switched to Typhoon

says D. M. Cawthon, Dudley Cawthon, Inc.
Miami, Florida

"... because I was looking for a quality line that was both complete and flexible. After going through the Typhoon factory, I saw for myself that the quality of materials and workmanship put into Typhoon equipment could only result in a superior product... and make friends and satisfied customers for us."



I switched to Typhoon

says E. W. Farr, Jr., Bell Refrigeration Corp.
Cleveland, Ohio

"... because we needed a reliable 'on time' delivery schedule and we found we could depend on Typhoon's shipping promises. Since we became members of the Typhoon family, our air conditioning business has been placed on a more personal and a more profitable basis."



Typhoon Air Conditioning Company
505 Carroll St., Brooklyn 15, N. Y.

Tell me about a Typhoon franchise in my territory. Send me Information Bulletin R-3

Name.....

Firm.....

Address.....

City.....Zone.....State.....

Take a tip from these money-making distributors. Send in the coupon for information on a Typhoon direct factory franchise.



Typhoon Air Conditioning Company
Division of Hupp Corporation
Brooklyn 15, New York
Specialists in Air Conditioning Since 1909



NOT THIS! Many heating systems make you uncomfortable. It's too cold at the floor, just right in the middle of the room, too hot near the ceiling.



BUT THIS! Waterbury COMFORTROL By-Pass Heating gives CONSTANT comfort. Tests have shown less than one degree temperature variation from floor to ceiling.

New kind of heating gives home owners the constant comfort they want

The family at left complains. The family at right recommends its heating contractor to friends. Reason? The family at right has the constant comfort every home buyer expects.

To help you deliver constant comfort, Waterbury has developed COMFORTROL By-Pass Heating.

COMFORTROL works on a very efficient principle. It *mixes* cool air with warm air in a ratio that provides the exact temperature called for by indoor-outdoor thermostats. It supplies this warmth

continuously at the same rate it escapes through walls and windows. Waterbury COMFORTROL By-Pass Heating takes maximum advantage of perimeter heat distribution and zone controls.

Your customers get absolutely constant comfort in every room. They have a continuous supply of fresh, clean, humidified air. There are no hot and cold cycles or drafts. In tests, temperature has varied less than one degree between floor and ceiling.

If you've ever needed an extra

feature to close a deal, you'll appreciate the talking points alone of Waterbury COMFORTROL.

SEND FOR FREE 32-PAGE BOOKLET!

"It Takes More Than Heat To Be Comfortable". It's packed with interesting information that will help you sell more units. Write Waterman-Waterbury Company, 1122 N.E. Jackson Street, Minneapolis 13, Minnesota.



Waterbury *Comfortrol*

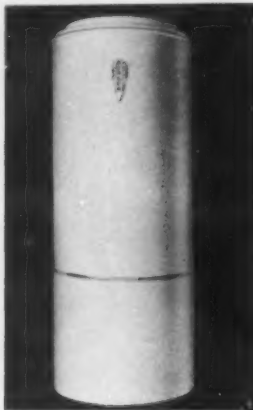
By the makers of world-famous Waterbury furnaces and air conditioners

equipment developments (From page 127)

volt a-c motor which is direct connected to cutting head. Shear produces 1725 cutting strokes per min., and will slit 12 ga. mild steel at the rate of 15 fpm, according to the company.

Highboy Furnace

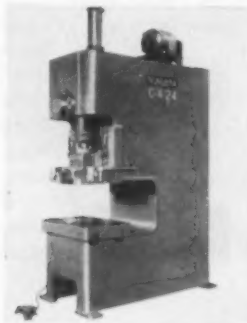
MODEL D "UTILAIRE" highboy furnace in 80,000, 105,000 and 125,000 Btu models in round cabinets —Berger Furnace Corp., 4th and Main Sts., Belle



Vernon, Pa. "Metered-Flow" burner discharges flame downward to distribute heat to heating element surfaces above burner and to bottom and lower body of the element, according to the manufacturer. Round cabinet is designed to eliminate sharp corners, reduce shipping damage and reduce collection of dust on surface. Gas or oil fired units are 50 in. high.

Deep Throat Presses

"STYLELINE" SERIES C deep throat presses in 8 models from 22 to 150 ton capacities and choice of throat depths—Niagara Machine & Tool Works, 637-697



Northland Ave., Buffalo 11, N.Y. Enclosed front-to-back crankshaft is designed to save space and permit use of wider slide and longer gibbing for greater support for wide dies and off-center loading. Entire driving mechanism is enclosed to eliminate overhung

bearings. Frame is box type with heavy crown, deep bed and bridge between gibs. Geared models have electro-pneumatic clutch and air releasing brake; non-geared units have mechanical sleeve clutch and drag brake and are available with pneumatic clutch trip and air releasing brake.

Automatic Shutoff Valve

REDESIGNED VERSION of model B-60 self powered automatic shutoff valve with capacity increased over previous model — General Controls Co., 801 Allen Ave., Glendale 1, Calif. Featured are main line filter screen; separate terminals for wiring of thermostat, limit control and pilot generator; snorkel pilot generator which incinerates lint and dust. Unit derives its own power from the pilot generator.

Room Air Conditioners

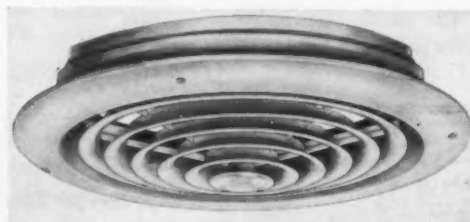
"CUSTOM" AND "ELDORADO" room air conditioners which can be mounted flush with drapes, on center-line of cabinet, with back of unit flush to outside wall or at any intermediate point—Servel, Inc., 119 Morton



Ave., Evansville 20, Ind. "Deluxe" models, in $\frac{3}{4}$ and 1 hp sizes have 3 push buttons; "Eldorado" $\frac{3}{4}$, 1 and $1\frac{1}{2}$ hp models have 6 positions and thermostat control. All models are $25\frac{3}{4}$ in. wide.

Adjustable Ceiling Diffuser

MODEL 72 ADJUSTABLE ceiling diffuser designed for application where varying air pattern is desired—



Air Control Products, Inc., Coopersville, Mich. Performance ranges from flat horizontal air movement



TORIDHEET Model JC
Oil Burner with
Durable Multi-Jet Blender

**Hottest
News
in HEATING...**



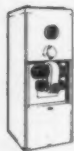
**Model JC Pressure-Atomizing
Oil Burners, Equipped with
Durable Multi-Jet Blenders,
Power these Fuel-Thrifty
TORIDHEET Furnaces**



Model OGU
Oil-Fired Boiler



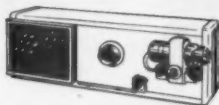
Model OGA-C
Counterflow Furnace



Model OGA-'Hi-Boy'
Furnace



Model OGA Oil-Fired
Winter Air Conditioner



Model OGA-40 Horizontal Furnace

TORIDHEET'S Durable Multi-Jet Blender

TORIDHEET'S new *Durable Multi-Jet Blender*, though of very simple design, is the ultimate in efficient blending of air with oil for complete combustion—no matter what percent of catalytic oil is used. TORIDHEET'S Multi-Jet principle provides outstanding fuel economy plus extreme quietness—with no pulsation in even the smallest heating units.

COMPLETE UNITS AND CONVERSION BURNERS—GAS OR OIL

Wall-Flame Oil Burners • Gun Burners • Wall Flame Boilers, Furnaces and Water Heaters • Gun Fired Boilers and Furnaces • Gas Conversion Burners and Gas Fired Furnaces • Low-Boys • Hi-Boys • Counterflows • Comfort Cooling Equipment

**SOME DESIRABLE DEALER FRANCHISES AVAILABLE
—YOUR INQUIRY IS INVITED**

CLEVELAND

Toridheet
AUTOMATIC HEATING

Toridheet Division
CLEVELAND STEEL PRODUCTS
CORPORATION

16035 Brookpark Road • Cleveland 11, Ohio

Affiliated Canadian Manufacturer: Aero Tool Works Limited, Toronto, Ontario

equipment developments (Continued)

at ceiling to a concentrated vertical pattern; adjustment of center cap moves center ring assembly up or down to desired pattern. Units are in 6 sizes from 8 to 2 in. No. 74 special damper unit is also available.

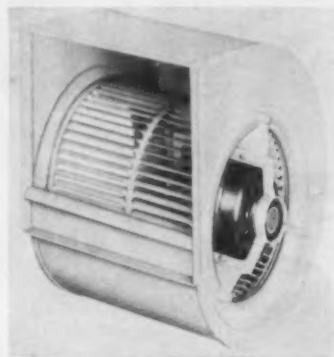
Gas Conversion Burners

"SPREAD-HEAT" BURNERS designed for coal to gas conversion, in three models—Barber Mfg. Co., 1052 E. 134th St., Cleveland 10, O. UP-1 models are rated



at 60,000 to 110,000 Btuh input; UP-2 at 60,000 to 240,000 Btuh; and UP-3 at 235,000 to 360,000 Btuh.

Burners are available with solenoid, diaphragm, or self-energizing control systems; electric ignition is optional. Size is said to permit installation through almost any ash pit door; four adjustable legs permit raising the flame level to correct burning position. Stainless steel flame spreader deflects heat throughout combustion chamber.



Direct Drive Blower

"BIG BOY" DIRECT DRIVE blower said to have an air flow capacity great enough to handle up to 125,000 Btu, 3 ton heating - cooling combination — Utility Fan Corp., 911 E. 59th St., Los Angeles 1. Neoprene hubs and permanent split capacitor motor are designed for quiet operation. Blower is speed controlled

Conductor L. Bow says:

CHOOSE CINCINNATI ELBOWS—
AUTOMATICALLY FORMED, THEN
HOT-DIPPED IN ZINC TO GIVE LONGER
RUST-RESISTING LIFE—EASIER TO
INSTALL BECAUSE THEY'RE SHAPED
AND TAPERED TO FIT ANY STANDARD
SIZE PIPE—ANY ANGLE, SIZE, GAUGE
OR METAL, INCLUDING COPPER, ALUM-
INUM, STAINLESS OR GALVANIZED
STEEL—ASK YOUR JOBBER!!

CINCINNATI ELBOW CO.

4730 MADISON ROAD • CINCINNATI 27, OHIO





**You're on 2 top
when you're a**



Dave Garroway, host on NBC-TV's "Today," will talk up Carrier's complete line of residential air conditioners. Garroway's quiet manner packs a powerful sales wallop.



Arlene Francis' "Home" show is viewed by millions of homemakers. She, too, will sell the complete Carrier home air conditioning line and send prospects to you.

**TV shows
Carrier dealer!**

When TV personalities Dave Garroway and Arlene Francis tell their listeners, "It's time to call Carrier"—it's *you* they'll call.

And these two star TV salesmen will give thousands of your prospects some mighty convincing reasons *why* to call you.

For example, as a Carrier dealer you'll have a product for every one of these prospects. You can talk year-round air conditioning *before* a house is built, add air conditioning to a present furnace or install the new Carrier furnace and fit on a cooling unit in the future.

Like to have Dave and Arlene work for you? It's time to call your Carrier distributor. Carrier Corporation, Syracuse, New York.



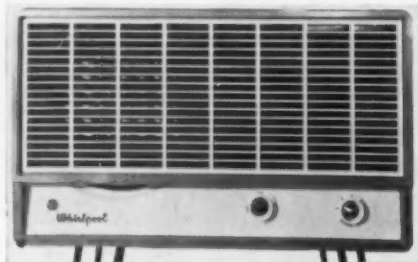
**first name
in air conditioning**

equipment developments (Continued)

by choke coil or reactor, the company states. Unit delivers 1400 to 1500 cfm at static pressure of 0.80 WG.

Air Conditioners with Electronic Filters

LINE OF 10 WINDOW model air conditioners ranging from 1/2 to 2 hp sizes and featuring an electronic filter on three larger models — Whirlpool-Seeger Corp., St. Joseph, Mich. Larger "Custom" units also provide



heating. Other features include built-in thermostats; air velocity control; air direction control wheel; flexible flush mounting; permanent aluminum filter which can be cleaned under a faucet ("Deluxe" models have disposable filters). Electronic filter is said to trap particles up to 1/25,000 in.

Packaged Metal Chimney

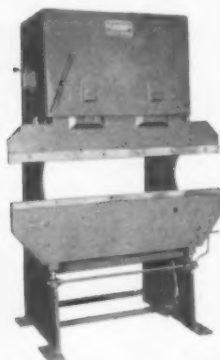
"CONTEMPORARY" MODEL preassembled metal chimney with horizontal machine pressed shadow lines — General Products Corp., Fredericksburg, Va. All-metal



unit weighs less than 100 lb, is approved for use with coal, oil, wood and gas. Features are stainless steel smoke pipe, weather guard top, rain grooves to prevent flashing leakage.

Expanded Channels for Heat Exchange

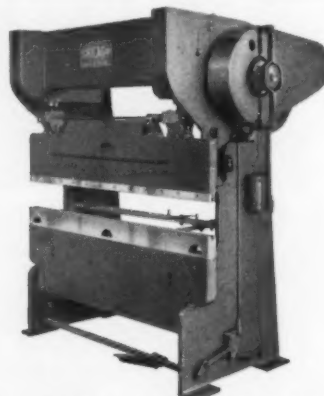
"TUBE-IN-STRIP" mill products in the form of a single strip or sheet of solid copper, brass or aluminum in which channels are expanded to desired running



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Models A, B, C, and L Press Brakes
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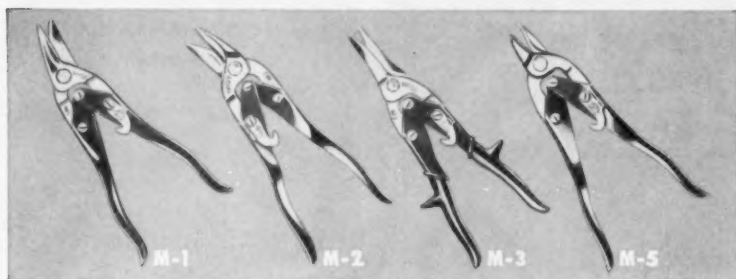
DREIS & KRUMP
MANUFACTURING CO.
7404 S. Loomis Boulevard, Chicago 36, Ill.



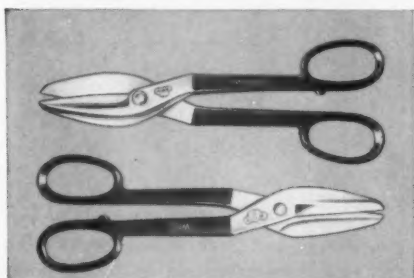
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"WE'VE SOLD WISS SNIPS FOR 75 YEARS, BECAUSE THEY CUT BEST WITH LEAST EFFORT"

Mr. Clegg Walker, President of Isaac Walker Hardware Co., Peoria, Ill., gives one big reason why his firm likes to feature Wiss metal cutting snips. There are several reasons why they are the choice of professional workers everywhere—why they sell better, with fewer returns. Wiss snips are produced largely by the handwork of skilled workers. Each pair is rigidly tested and guaranteed perfect. Bolts are set precisely to reduce wear and to increase cutting power with the least effort.

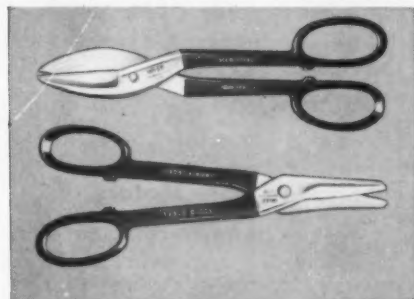


WISS METAL MASTER SNIPS: Compound action design delivers amazing cutting power. These 10" snips cut with about one-half the effort required for standard 12½" snips. One edge serrated to prevent slipping. M-1 (cuts left) and M-2 (cuts right) are designed to cut the most intricate scrolls and circles. M-3 is for shallow arcs and straight cutting. M-5 Bulldog Heavy Duty snips are tops for notching, nibbling and cutting shallow arcs in sheet metal as heavy as 16 gauge.



WISS INLAID SNIPS

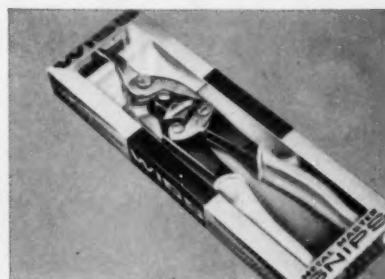
High carbon crucible steel welded to a hot drop-forged frame provides that *extra* service demanded by professional users everywhere. Six Straight Cutting sizes from 11½" to 17", including Bulldog Snips for notching. Three Combination* Cutting sizes, 12½", 13½" and 14½".



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*Made with straight blades, but ground and shaped so they readily cut curves and irregular shapes as well as straight.



NEW HANDLE GRIPS IN BRIGHT IDENTIFYING COLORS!

Famous Wiss Metal-Master snips are now available with vinyl plastic grips — tough, resilient, long-wearing, acid and grease resistant. For instant identification by the worker, M-1R is fitted with bright red handles; M-2R with green handles; M-3R with yellow handles.

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In grueling tests made by an independent laboratory, Wiss Metal-Master, inlaid and solid steel snips out-performed other leading brands. Wiss snips in each category proved to cut cleanly with less effort required. The tests were so severe that some competing brands were damaged — cracked at bolt, handle bent out of shape. This is conclusive, unbiased *proof* that Wiss snips are the finest and most satisfactory available to metal workers. The laboratory report stated: "Wiss inlaid straight cut snips showed far superior cutting qualities than the other shears tested and should be listed in a separate class from the solid steel snips."

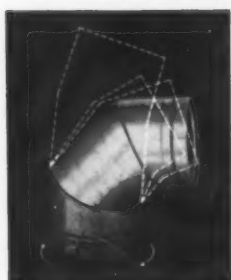
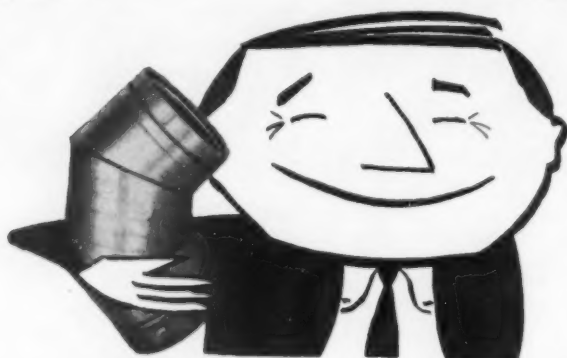


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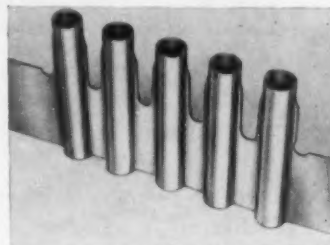
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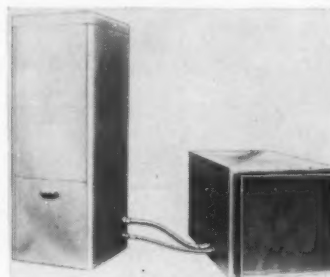
lengths in various shapes and sizes — Revere Copper and Brass Inc., 230 Park Ave., New York 17. De-



signed for all types of heat exchange, the product can be stamped or drawn into desired shapes prior to inflation of channels into continuous running lengths of tube, etc. Tube spacing can be as close as 1/4 in. Inside diameters of tubes can vary from 3/16 to 5/8 in. when unexpanded. Tube wall gage can vary from 0.0025 in. to whatever the inflation equipment permits.

Remote Air Conditioners

AIR COOLED residential air conditioners in 2, 3 and 5 ton sizes — Perfection Industries Div., Hupp



Corp., 7609 Platt Ave., Cleveland 4. Blower unit on the 2 and 3 ton models can be installed above or below the cooling unit for 30 air flow variations, according to the manufacturer. Condenser is installed in remote location.

Shaded Pole Motors

SHADED POLE motors for air conditioning and air moving equipment — Lamb Electric Co., 627 Lake St., Kent, O. Ratings range from 1/35



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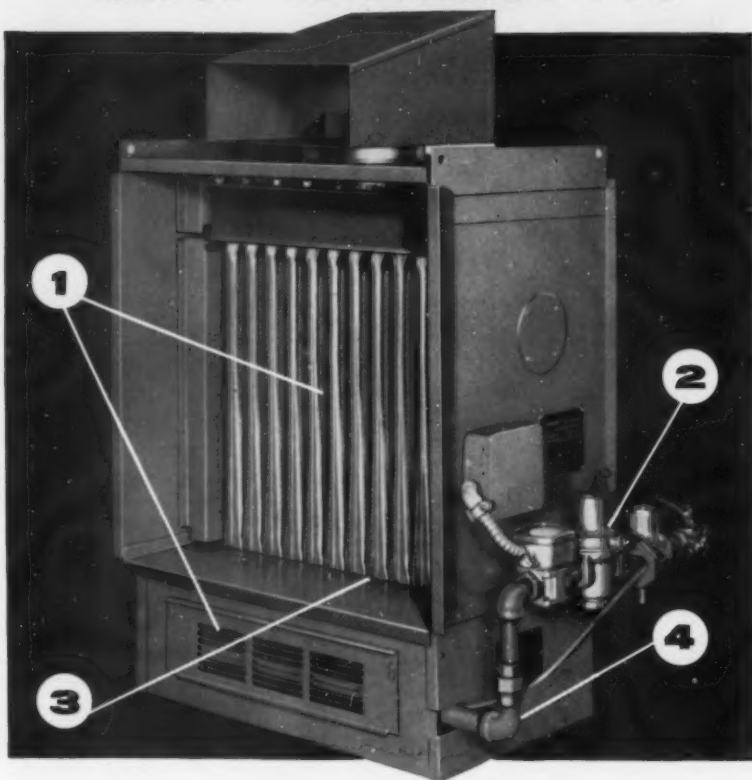
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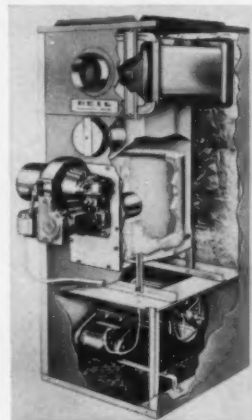
D-1277

equipment developments

to 1/4 hp; all are 1050 rpm. Featured are rigid stator core; machine-wound, double-dipped and baked-with-varnish windings; aluminum rotor cage; diecast end frames with deflector to provide air cooling.

Oil Fired Furnace

MODEL JF-O oil fired highboy furnace rated at 84,000 Btu output — Heil Co., 3000 W. Montana St., Milwaukee 1, Wis. Designed for small and medi-



um sized homes, the preassembled unit features pressure-atomizing oil burner, octagonal heat exchanger and two tone finish. Return air enters through base or from either side. Unit requires slightly over 4 sq ft of floor space, is 62 in. high.

Packaged Air Conditioners

AIR COOLED residential air conditioning unit in self contained or remote type models — Berger Furnace Corp., 4th and Main St., Belle Vernon, Pa. Available in 2, 3 and 5 ton capacities, the unit can be installed in existing or new heating systems.

Ignition Electrodes

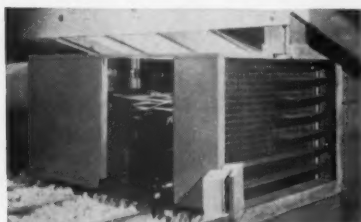
"STANDARD" AND "Special" electrode assemblies for oil burners — Wm. Steinen Mfg. Co., 43 Bruen St., Newark 5, N. J. Five standard assemblies can be applied to 130 known oil burner models, according to the manufacturer. Four of the standard

equipment developments

models have 9/16 in. diameter insulators; the fifth is 7/16 in.

Horizontal Cooling Unit

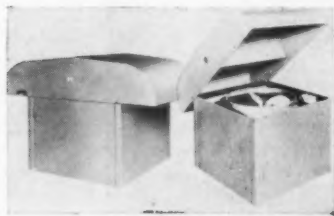
"STOWAWAY" self-contained air cooled air conditioning unit in 2, 3 and 5 ton capacities with "Power Prop" axial fan designed especially for improved air handling with minimum



noise — Lennox Industries, Inc., 200 S. 12th Ave., Marshalltown, Ia. Designed to tie in to heating system ductwork, the unit features two-stage cooling through two hermetic compressors; one operates continuously for normal cooling, second cuts in when cooling load is heavy. Fan is designed for increased condenser capacity; air is pulled through condenser instead of being expelled, to eliminate windmilling of fan and filter debris from air. Also featured is automatic damper operated by air moved by blower for automatic changeover to heating or cooling.

Roof Ventilator

PROPELLER TYPE power roof ventilators with 12 to 48 in. fans and 640



to 22,000 cfm capacities — Peerless Electric Co., 1401 W. Market St.,

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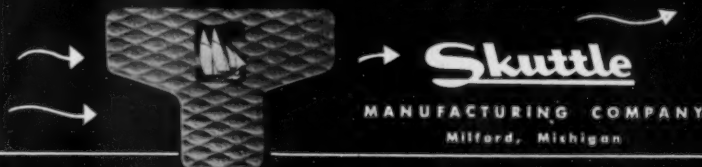
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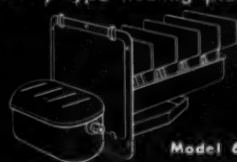
For further information, write to:



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Model 450



Model 600 B

equipment developments

Warren, O. Low silhouette unit is designed for exhaust duty on commercial and industrial buildings. Air is discharged downward; shutters are mounted at bottom of the unit. Automatic or motor driven shutters are available. Disconnect switches are added as a safety feature.

Gasket Sealer

"TESAMOLL" gasket sealing material in foam plastic with pressure-sensitive backing — United Mineral & Chemical Corp., 16 Hudson St., New York 13. Applications include access doors, louvers, filter frame, and other items requiring gaskets or cushioning. Material is $\frac{1}{8}$ to $\frac{1}{4}$ in. thick; widths range from $\frac{3}{8}$ to 19 in.

Room Cooler

REDESIGNED "ROYAL AIRE JR." room air conditioner with increased air delivery, relocated air discharge to front, and hidden panel for controls — Union Asbestos & Rubber Co., 332

S. Michigan Ave., Chicago 4. Unit is enclosed in 18 ga. steel cabinet measuring 29 in. high, 19 in. wide and 18 in. deep. Water cooled unit can draw water from any household tap



through $\frac{3}{8}$ in. flexible rubber tube. Automatic water valve regulates flow. The $\frac{3}{4}$ ton unit has a maximum air flow capacity of 370 cfm, weighs 155 lb, the company reports.

Flange-Mounted Burners

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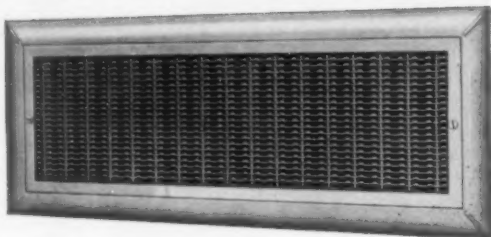
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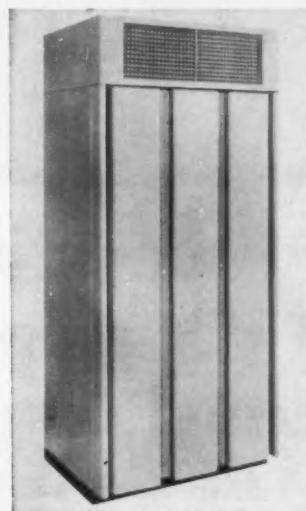
DEPT. B. 1106 ROCK ST., ROCKFORD, ILLINOIS, U. S. A.

equipment developments

water heaters with minimum tube openings of $4\frac{1}{4}$ in. diameter — Carlin Co., River Rd., Wethersfield, Conn. Model 150F is rated at 0.65 to 1.50 gph; Model 150SF-2, featuring high temperature combustion head, is rated at 0.65 to 1.35 gph, the company reports.

Pastel Air Conditioners

PACKAGED AIR CONDITIONING units in 3 through 30 ton capacities in a variety of pastel colors — Refrigeration Div., Curtis Mfg. Co., 1946



Kienlen Ave., St. Louis 20, Mo. Designed to blend with all decorating schemes, the units are in a selection of color combinations for residential or commercial use, according to the manufacturer.

Centrifugal Blower Motor

ELECTRIC split capacitor motor rated at $\frac{1}{4}$ hp, 1050 rpm, with rotating member on the outside for use with centrifugal blowers — Electronics Div., Iron Fireman Mfg. Co., 2838 S. E. 9th Ave., Portland 2, Ore. Integral drive of blower wheel is accomplished by a flange on the rotor which connects directly to the wheel; belts and pulleys are not needed, the company states. Motor can be mounted with shaft vertical or in any other desired position.

new literature . . .

NWAHACA Issues Revised Manuals

REVISED EDITIONS of six design and installation manuals contain recent design information on warm air heating and air conditioning developed through laboratory and field investigation work — National Warm Air Heating and Air Conditioning Association, 640 Engineers Bldg., Cleveland 14. The revised manuals are:

Manual 3 — Calculating Heat Losses (5th edition, \$1.25). In this new edition have been added heat loss factors covering a large number of the newer methods of residential construction being used today, including many of those used in project-house buildings.

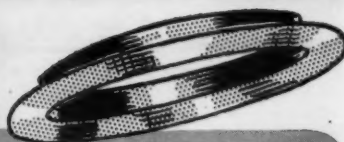
Manual 3 — Simplified Method (2nd edition, 60 cents). The same heat loss factors that have been added to Calculating Heat Losses have been included in this guide as well as a combination of tables designed to make the Simplified Method manual easier to use.

Manual 4 — Warm Air Perimeter Heating (5th edition, \$1.50). This manual discusses warm air perimeter systems using 5 and 6 in. pipes for homes built on concrete slabs, over crawl spaces or with basements. It gives design and installation data on perimeter loop, perimeter radial, crawl space radial, crawl space extended plenum, crawl space trunk and branch, and crawl space plenum perimeter systems.

Manual 6 — Manual for Adjusting Winter Air Conditioning Systems for Maximum Comfort (2nd edition, \$1.00). This edition gives simplified instructions on recommended procedures for balancing winter air conditioning systems as well as properly adjusting them for CAC (Comfort Air Circulation). Included are instructions for adjusting heat input for all fuels — oil, gas, LP gas and stoker fired coal.

Manual 9 — Design and Installation of Warm Air Winter Air Conditioning Systems and Year 'Round Air Conditioning Systems (5th edition, \$1.00). This manual contains design data for designing forced warm air systems for residential and commercial structures with heat losses over 120,000 Btuh. It also contains design data used in designing year 'round air conditioning systems for structures when the heat loss supplied with a single unit does not exceed 250,000 Btuh and where total heat gain does not exceed 1.3 times the sensible heat gain.

Manual 10 — Four Inch Pipe Warm Air Perimeter Heating (4th edition, \$1.00). This covers the design and installation of warm air perimeter systems using 4 in. round ducts for all warm air runs. Systems described are "low velocity" and may be used with forced warm air furnaces rated at a total static pressure of 0.20 in. water ga or comparable rating at sea level with a temperature rise range of 70 to 100 F through the furnace.



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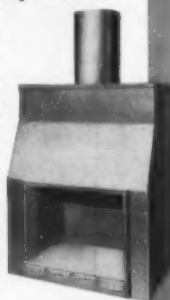
Whatever system you want—2, 3, or 5 ton self-contained water-cooled units or remote air-cooled models, in matching twin units or for add-on installations—Majestic has it in the 1956 line. For only a very few dollars, a Majestic Furnace installation can be equipped with a remote-system evaporator cabinet, ready for "the works" whenever the home owner decides on all-season air conditioning.

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new literature

(Continued)

By-Pass Home Heating System

THE ADVANTAGES of a continuous circulating warm air heating system are explained in a booklet entitled *It Takes More than Heat to be Comfortable* — The Waterman-Waterbury Co., 1121 Jackson St., N. E., Minneapolis 13. Aimed at the home owner, the booklet is illustrated throughout with cartoon drawings and the text is brief and non-technical. It stresses that home comfort depends on five factors — constant temperature, proper humidity, and movement, cleanliness and freshness of air.

Heating and Cooling Equipment

PACKAGED COOLING and heating equipment for homes, stores, shops and offices is covered in a 12 page illustrated booklet — Worthington Corp., Harrison, N. J. Featured are gas or oil fired year 'round air conditioners as well as "Flexi-Cool" cooling units which may be installed either horizontally or vertically and can be used with an existing warm air furnace or installed as a complete self-contained air conditioner. Also available are specification sheets for air cooled equipment and a year 'round air conditioner with oil fired furnace. For copies of the bulletin, specify #C-1100-B65. For specification sheets, specify #C-1100-S99 (year 'round oil fired furnace); #C-1100-S103 and #C-1100-S102 (air cooled condenser); #C-1100-S101 (air cooled condensing unit); and #C-1100-S97 (water cooled condensing unit).

Metal Curtain Wall

THE PAPERS and discussions presented at the recent curtain wall conference held under the sponsorship of the Building Research Institute in cooperation with various industry groups are contained in a 140 page book entitled *Metal Curtain Walls* (\$4.00) — Building Research Institute, Div. of Engineering and Industrial Research, National Academy of Sciences — National Research Council, 2101 Constitution Ave., Washington 25. The book is illustrated throughout with photographs, charts and diagrams. Contents include chapters covering recent studies of metal curtain walls, architectural design, performance requirements in panel design, structural design techniques, panel insulation and condensation control, sound transmission, and erection techniques.

Registers, Grilles and Diffusers

CATALOG A (74 pages) contains descriptive information and engineering data on registers, grilles and diffusers—Hart & Cooley Mfg. Co., 500 E. Eighth St., Holland, Mich. Arranged to simplify selection for all types of installations, the catalog is divided into five

sections: Perimeter Heating and Air Conditioning Line, which covers sidewall, floor, baseboard strip type and out-of-wall diffusers; Residential Heating and Air Conditioning Line, which presents information on registers, grilles, intakes, ceiling diffusers, installation frames, out-of-wall registers, frames and ventilating grilles; Commercial Heating and Air Conditioning Line, which covers "Tripl-Aire" registers and grilles and "Fixt-Aire" return air registers and grilles; Gravity Line, which gives data on baseboard, sidewall and floor registers as well as return air intakes, adjustable ceiling ventilators and ventilating registers; and Accessory Line, which includes furnace regulator sets, damper regulator sets, dampers, damper clips and tips, furnace chain, etc.

Architectural Aluminum Products

THREE ILLUSTRATED BOOKLETS—Wall Systems of Alcoa Aluminum, Aluminum in Architecture, and Aluminum Roofing and Siding Products—present information on aluminum architectural building products—Aluminum Co. of America, 773 Alcoa Bldg., Pittsburgh 19. Wall Systems of Alcoa Aluminum deals with the various types of curtain wall systems, design considerations and colored finishes. Specifications for using colored aluminum are included. Aluminum in Architecture is a collection of details and specification data on window sills, thresholds, interior facing and moldings, and other aluminum building products. Aluminum Roofing and Siding Products presents information on the various types of aluminum roofing and siding materials currently available, including V beam roofing sheet.

Sheet Metal Lock Rolling Machines

CATALOG 156 covers lock rolling and snap lock machines for sheet metal contractors — The Flagler Corp., 19321 Filer Ave., Detroit 34. The "Junior 24" Pittsburgh lock machine is described as well as 24 gage and heavier portable and heavy duty machines. Power flanging attachments and "Universal" straightening head are covered. Dual head, high production units are shown. Complete specifications are included.

Industrial Fans

BULLETIN 5306 (72 pages) describes series 106 industrial fans designed to provide complete full range coverage of industrial air and material handling requirements — American Blower Corp., Detroit 32. The catalog covers features of the fans, discussing such considerations as wheels and arrangements, optional construction, modifications and special design as well as construction details for high temperature operation.

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ENGINEERED TO COST YOU LESS**

- National Lock's broad experience in designing and manufacturing custom and standard appliance hardware can be put to use for you. Our research development engineers will work independently or with your own designers in solving your particular hardware problems.

- This service includes zinc die casting, stamping, compression and injection plastic molding. Write us for complete information.

**LATCHES, PULLS and HANDLES
LID and DOOR HARDWARE
CASTERS and GLIDES
BUTTS and HINGES
CABINET LOCKS
FASTENERS**
(regular and special)



NATIONAL LOCK COMPANY
ROCKFORD, ILLINOIS

A special section covers the company's packaged industrial fan, a self contained unit complete with fan, motor and drive unit. Another section covers points to consider in the selection of fans, gives rating table terminology, ordering data and operating limits. Following the selection data are 50 pages of ratings for various wheel types and sizes.

Air Conditioning Time Controls

BULLETIN No. 511 explains what type of time control to use for a particular situation or type of air conditioner — Tork Clock Co., Inc., Mt. Vernon, N. Y. Divided into two sections, the bulletin deals with controls for window models (portable plug-in time switches) as well as for commercial installations (installed type time switches). Listed are the various dials available — plain dial for night shutdown, "Skip-A-Day" for weekend omission, and "Seven Day" for varying daily schedule on one dial.

Porcelain Enameled Panels

DESIGN DATA FILE on the use of porcelain enameled panels in school construction includes photographs,

technical data and architectural drawings on four basic types of panels—double faced, single faced, "Vision-Vent" and corrugated porcelain enameled aluminum—Ingram-Richardson Mfg. Co., Beaver Falls, Pa. Ask for data file No. 300.

Deep Throat Presses

DESCRIPTIONS and specifications for deep throat presses are contained in bulletin 61C—Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11. Available in a range of 22 to 150 tons capacity, the presses feature a front-to-back crankshaft design and enclosed driving mechanism. Also described and illustrated are other press features including electro-pneumatic clutch and air releasing brake, box-type welded steel frames, adjustable air counterbalance, automatic lubrication and operating controls.

Air and Water Cooled Condensing Units

BOOKLET covers "Copelametic" condensing units with air and water cooled motor compressors (32 pages)—Copeland Refrigeration Corp., Sidney, O. The units are available in capacities ranging from 1/3 through 7½ hp. High, medium and low temperature applications are described. Also being offered is a four page bulletin describing air cooled models in 2, 3 and 5 hp sizes.

**THEY DON'T MAKE 'EM
ANY BETTER.**

BRANDES *

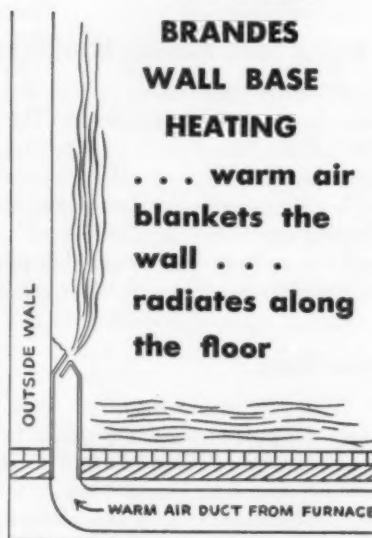
***THE ORIGINAL PATENTED
WALL BASE HEATING**

When it comes to wall base heating, Brandes stands head and shoulder over the crowd. Three distinct lines and a total of fourteen different sizes to choose from gives Brandes the most complete line on the market, today. With Brandes wall base heating you get the ultimate in beauty and performance at reasonable prices, too! For the best, write the Brandes Company, 2046 Winnebago Street, Madison 4, Wis.

**Looks Better!
Heats Better!
Is Better!**

**BRANDES
WALL BASE
HEATING**

**. . . warm air
blankets the
wall . . .
radiates along
the floor**



wholesaler doings...

► **THE TIFFIN ART METAL CO.**, Tiffin, O. has purchased the Earnshaw Sheet Metal Supply Co. of Mansfield, and will operate the former Earnshaw firm as its Mansfield branch. A. G. Earnshaw will remain with the company in the capacity of consultant.

► **ARMSTRONG SUPPLY CO.**, distributor for the Armstrong Furnace Co. in Salt Lake City, is building a new office and warehouse building. The new building will contain 16,000 sq ft of space.

► **THE FRONTIER SALES CORP.**, 236 Edison Bldg., Salt Lake City has been appointed distributor for the Herbster Furnace Co. in the Rocky Mountain states. The Frontier firm will handle the distribution of highboy and lowboy gas furnaces as well as "Heat-N-Dry" combination gas furnace and clothes dryers in the five states of Utah, Nevada, Arizona, Idaho and Wyoming.

► **THE INDUSTRIAL SUPPLY DIV.**, Forest Products Co., Kalispell, Mont. has been named a distributor of ventilating sets and fans by the Sturtevant Div. of Westinghouse Electric Corp. Territory to be served comprises the states of Montana and Idaho.

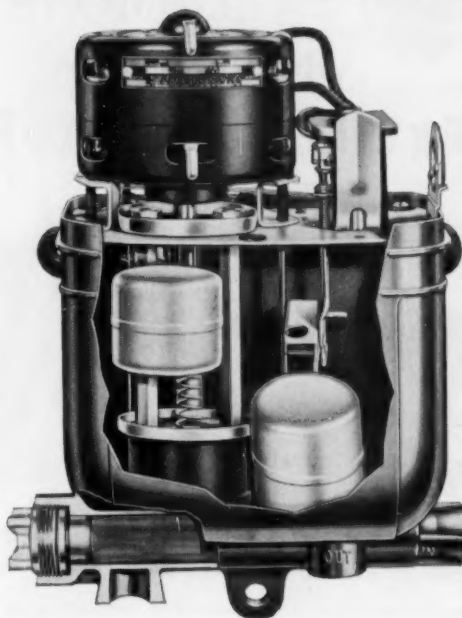
► **FRED KEEP** has been elected vice president in charge of sales of Sid Harvey of Mass., Inc. Mr. Keep will be in charge of the company's branch stores in Boston, Springfield, Worcester, Lowell and Providence, R. I. as well as the headquarters store in Malden, Mass.

► **THE BEAULLIEU Air Conditioning & Heating Co.** of Lafayette, La. and the Mechanical Equipment Co. of Mobile, Ala. have been appointed distributors of Servel air conditioning products in their respective trading areas. The Beaulieu Co. is located at 610 Garfield St. The Mechanical Equipment Co. has offices at 824 Holcombe Ave.

► **UTTER & SUTER CO.**, Lexington, Ky. has been named a wholesaler of "Weathertron" heat pumps by the General Electric Co. With headquarters at 823 W. Pine St., the new wholesaler will serve the counties of Bourbon, Clark, Fayette, Jessamine, Madison, Scott and Woodford.

► **A NEW WHOLESALER** of the Heil Co.'s air conditioning and heating equipment is Adams, Inc., 6 - 13th St., N., Fargo, N.D. Territory to be covered comprises North Dakota as well as parts of South Dakota and Minnesota. Michigan Heating Supply Co. has been appointed wholesaler in southeastern Michigan. The Michigan firm is located at 23869 Van Born Rd., Dearborn.

BIG LIFT for heating plants with a remote tank









Only Model 356

OILIFTER

offers your customers all these features

Oilifter lifts fuel oil from basement or remote storage tank — to the first floor, second floor, or as much as 25 feet away from heating appliance. Feeds and keeps one or more oil burning appliances supplied at all times. Operates automatically! Check these additional features:

-  **Complete freedom from fuel handling and spillage — no waste.**
-  **Simple to install — Mounts with 3 screws. Only one 1/4" O.D. copper tube needed.**
-  **Simple to operate — Turn on at beginning of season—no further attention. No radio or TV hum.**
-  **No overflow — Safety float protects against overflow. Built-in strainer traps dirt.**
-  **Pumps No. 1 or 2 fuel oil — 3 gph at 25 ft. lift and 4 1/2 gph at 10 ft. lift.**
-  **Listed by Underwriters' Laboratories — Guaranteed by A-P Controls Corporation.**

Order from your distributor, or write:

for Air • Liquids • Gases • Refrigerants

DEPENDABLE Controls

A-P CONTROLS CORPORATION

2432 N. 32nd Street, MILWAUKEE 45, Wisconsin
 COOKSVILLE, Ontario
 For Export: 13 E. 40th Street, New York 16, N. Y., U.S.A.



SAVE TIME and MONEY when you form FLEXIBLE CONNECTORS

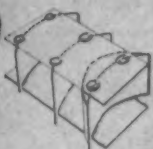


ELGEN SILENT DUCT

*Pats. Pend.

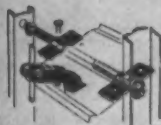
Imagine, this one-piece, factory-assembled metal-to-metal unit unrolls absolutely flat! No more bothering with unwieldy duct material that buckles easily. Elgen Silent Duct makes on-the-spot work a cinch . . . you just measure and cut. You can fabricate any type of flexible duct connector in minutes . . . with half the effort! You can save up to 60%! No more worry about an inventory of "made-up" parts, either. Your choice of U.L. approved, (Gov't. Spec. Mil-D-10860) canvas, Johns-Manville asbestos and U. S. Rubber neoprene coated fibre glass, in 3" or 6" widths attached to 24 or 26 gauge galvanized steel or 24 gauge aluminum to fill every job requirement. All available in handy-to-use 25, 50 or 100 foot rolls.

2 More Elgen Products That Put Profits In Your Pocket!



ELGEN ALL-TITE VANE RUNNER

• Quickest and easiest way ever devised for installing turning vanes for square elbows • No special tools required; vanes lock easily with blow of hammer



ELGEN DAMPERSET

For Multi-Blade Dampers . . . Parallel or Opposed • Most perfect damper hardware developed • Assembles in a jiffy . . . cuts assembly time in half • Easily adjusted and self-aligning. Licensed by Minneapolis-Honeywell

**ELGEN PRODUCTS ARE SOLD THROUGH
LEADING JOBBERS EVERYWHERE.**

"Put Profits In Your Pocket!"



Write today for free catalog and "spec" sheet

Dept. A-2

ELGEN MANUFACTURING CORP. 41-34 39 Street,
Long Island City, N. Y.

merchandising ideas



BOTH "OLD" AND "NEW" schoolrooms on display in this travelling exhibit enjoy the comforts of air conditioning

► DURING THE NEXT FIVE YEARS a two-car "school on wheels" will visit an estimated 250 American cities to demonstrate advantages of the modern schoolroom over the old. Only one change in the "old" schoolroom will be noted by an anticipated 3,000,000 visitors: It — as well as the "new" schoolroom — will be air conditioned by a Carrier "Weathermaker" unit.

► AN UNUSUAL APPROACH was used in the presentation of the annual report for 1955 published by Washington Steel Corp. Imbedded in the report's $8\frac{1}{2} \times 11$ in. cover is a $5\frac{1}{2} \times 8$ in. stainless steel embossed plate picturing a rolling machine turning out a roll of the company's product — stainless steel sheets. On the plate are the company's name and the words "Annual Report 1955." A deep red, velvet-like border outlines the metal plate. The use of stainless steel for this purpose is one way of making known the company's product and points out another way to use stainless steel in a dramatic manner.

► THE ARMSTRONG FURNACE Co.'s Omaha distributor — Plumb Supply-Omaha — maintains a display of Armstrong furnaces in the lobby of the Omaha Public Gas Co. The display, seen by some 500 persons a day, has led to numerous inquiries.

► THE WILLIAMS DIV., Eureka Williams Corp., has developed a heating and air conditioning show to introduce its new products to dealers in 63 cities. Moving vans are used to transport the equipment, which includes oil and gas fired burners, furnaces and air conditioning units.

► THE RHEEM MFG. Co. recently field tested a new sales presentation for heating and air conditioning dealers. According to Ed Soby, advertising and sales promotion manager for Rheem Products Div., "every dealer invited to participate in the field test produced results in more actual orders." The presentation features brief, non-technical selling copy and illustrations that build up into a complete assembly as the pages are turned. The new book is being introduced to dealers in a series of meetings conducted by wholesalers with the assistance of company representatives.

we hear that...

► **TITUS MFG. CORP.** and Titus Inc. have merged and will operate under the name of Titus Mfg. Corp. D. L. Titus is president of the company, R. W. Titus vice president and J. S. Smith vice president in charge of sales.



RECEIVING CONGRATULATIONS from H. P. Mueller, (right), president of Mueller Climatrol, for outstanding sales efforts during 1955, are (from left) Claude J. Grieger, W. A. McLemore and Jack H. Beck

► **H. P. MUELLER**, president of Mueller Climatrol, presented the annual "President's Pin" award to the three top salesmen at the 1956 annual national sales conference. Claude J. Grieger, Milwaukee sales representative, received the first award; W. A. McLemore, northern Wisconsin sales, second; and Jack H. Beck, Milwaukee sales representative, third.

► **THE HALL-NEAL Furnace Co.** recently held a three day school for dealers on "Victoire" central cooling units. Fred S. Boone, president, said the school was one of the most successful in the company's experience. Cornell Bodell, chief engineer for the Hall-Neal company, conducted the classes with the assistance of Dick Herbert and Ted Smoot of Primor Products, Adrian, Mich. The program covered such subjects as sizing cooling equipment for the job, service, maintenance and operational checks, and techniques of installation. Forty dealers from Indiana, Illinois, Ohio, Michigan and Minnesota were in attendance. A second school is being planned for the coming spring.

► **AN AUTOMATIC** coal burning furnace which does not require clinker handling is now being field tested and may soon be available for the residential market. The furnace is a forced air unit which combines the stoker, furnace and blower in one package. Designated the "Coal-O-Matic," it is manufactured by Dallas Engineers, Inc., Trucksville, Pa. Inquiries regarding

Modern Scully Aids for Oil Heat Installations



... the exclusive

VENTALARM® GAUGE

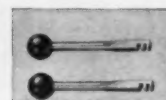
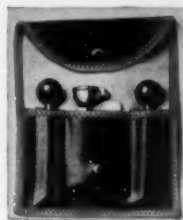
UNDERWRITER'S APPROVED

One labor-saving unit combining the famous VENTALARM Whistling Tank Fill Signal with a tank gauge. One item to install, instead of three! Unit case acts as a reducer. Sizes: VG-A, 2" x 1 1/4". VG-B, 1 1/2" x 1 1/4".

Specify tank depth when ordering.

... the New

3-D ELECTRODE KIT



Designed for fast accurate 3-dimensional adjustment of burner electrodes. Gauge cup slips over burner nozzle. Permits setting by degree angles or by inch measurement method. Special electrode benders included. All in a handy pouch kit.

... the New

Scully Safety Vent Cap



Guarantees full venting. Floating screen guards against insect clogging. Clutch-head screw locks cap on pipe, making it theft-proof. Size: 1 1/4". Handy-Pack of 6 to a box.

... the Original and Dependable



VENTALARM

WHISTLING TANK FILL SIGNAL

Provides for speedy, accurate oil delivery, night or day, without home entry. With it, fuel delivery becomes truly automatic for the homeowner. Full variety of models and sizes for old and new tank installations — residential, commercial or industrial.

Over 4,000,000 VENTALARM Signals now installed.

Scully Products are manufactured under U. S. and Foreign Patents and Patents Pending.

PURCHASE FROM YOUR FAVORITE SUPPLIER



SCULLY SIGNAL COMPANY

174 Green Street, Melrose 76, Mass.

Canadian Branch: Scully Signal Ltd., 286 King St. W., Toronto, Ontario

©1955 SCULLY SIGNAL CO.

SAVE ON ALL STEEL COSTS

Rolled Steel Products can save you up to 20% on all your steel needs

No matter what size, type or gauge steel you use in your plant, you can *save up to 20%* by calling **ROLLED STEEL PRODUCTS**. It doesn't matter where you are or how fast you need it, **ROLLED STEEL PRODUCTS** will get it to you and *unconditionally guarantee your satisfaction!*

Over 4,000 active, satisfied customers are saving with our low prices. Why not find out how you can, too?

Call us collect today (ORchard 3-7400, Skokie, Illinois) and find out how we can supply needs and help you cut costs, too!



Another steel-buy typical of
ROLLED STEEL'S VALUES:

186,000 pounds, 26 ga.
Prime galvanized (stained)
30" x 120"

\$7.95
NET/CWT

Rolled Steel Products

Division of Emergency Steel Service Corporation
Distributors of: SHEETS—PLATES—BARS—STRUCTURALS—STRIP

GENERAL OFFICES & WAREHOUSE

7415 St. Louis Ave. Skokie, Illinois

ORchard 3-7400

we hear that

(Continued)

the furnace should be sent to Automatic Solid Fuels Equipment, Inc., 500 Board of Trade Bldg., Indianapolis 4.



PRACTICAL TRAINING with operating equipment was a feature of the application sales schools conducted by the Janitrol Heating & Air Conditioning Div., Surface Combustion Corp. during its recent annual sales meeting

► **SALES REPRESENTATIVES** of the Janitrol Heating & Air Conditioning Div., Surface Combustion Corp. received an advanced course of training in the design, application and operation of year 'round comfort systems at the division's recent annual sales meeting. During a six week period, more than 100 men of the field sales organization came to the Columbus plant to take the course.

H. C. Gurney, sales manager of the division, reports that the service schools have been extended to 12 classes for 1956. In addition to the regular gas and oil heating schools, a new series of six one-week schools on summer air conditioning will be offered. In addition to service, the cooling schools feature instruction on heat gain calculation, layout, application and sales techniques. Working units available for the students' use include both air and water cooled units as well as a cooling tower. Starting dates for the 1956 schools are as follows: heating — February 13, March 12, April 9, April 23, May 7 and May 21; cooling — February 20, March 5, March 19, April 16, April 30 and May 14.

► **VIKING AIR PRODUCTS** is the new name of Viking Air Conditioning Div., National-U.S. Radiator Corp. The new name was chosen as being more descriptive of the division's products — furnace blowers, furnace and duct humidifiers, blower wheels, fans, etc.

► **THE JAMES F. LINCOLN Arc Welding Foundation** of Cleveland is offering \$20,000 in cash awards for ideas or suggestions that will accelerate progress in arc welding. Ideas may be submitted on any aspect

we hear that

(Continued)

of arc welding that can be used to advance welded design, welding engineering or the general application of the arc welding process. For complete information on the contest, which closes July 30, 1956, write the James F. Lincoln Arc Welding Foundation, Cleveland 17.

► DISTRICT MANAGERS of Armstrong Furnace Co. met recently in Columbus for their week-long annual sales meeting. W. J. Olsen, president and general manager, predicted that "1956 is going to be a year that will surpass any to date for our sale of residential furnaces and summer air conditioning."

► ALTON MFG. CO. is now producing fin-tube coils for its own requirements and expects soon to be in a position to supply the air conditioning industry in general with direct expansion coils.

► AT A RECENT special meeting of the board of directors of Dreis & Krump Mfg. Co., A. J. DeWolf was elected president and treasurer of the company. He succeeds his father-in-law, Walter H. Dreis, who died last December. Mr. DeWolf has been with the company since 1945 in various capacities, recently as

vice president and general sales manager. Also elected were Edward J. Dreis, first vice president; Matt Krump, second vice president; and Gert Winkler, secretary.



A. J. DeWolf



Charles M. Stuart

► CHARLES M. STUART, assistant to the executive vice president of Carrier Corp., has been "loaned" to the federal government for six months. He will direct activities of the general industrial equipment division of the Business and Defense Services Administration. Mr. Stuart and his staff will serve as liaison between key industrial firms and the government.

► EDWIN B. ROOT, Professional Engineer, has resigned from Superior Safety Furnace Pipe Co. and plans to devote full time to private practice. His offices

New Flagler Catalog 156

DESCRIBES THE MOST COMPLETE LINE OF SHEET METAL LOCK ROLLING MACHINES



Flagler
SHEET METAL
LOCK ROLLING MACHINES
CATALOG 156
The Flagler Corporation
19325 FILER AVENUE - DETROIT 34, MICHIGAN
Phone: TWInbrook 3-3161



**SHOWS THE MANY
FEATURES THAT ASSURE
YOU BETTER LOCKS, FASTER
PRODUCTION, GREATER PROFITS!**

The FLAGLER Corporation

Phone **TWInbrook 3-3161**

**19325 FILER AVE.
DETROIT 34, MICH.**

Send this Coupon for Free Catalog, to:

The Flagler Corp., 19325 Filer Ave., Detroit 34, Mich.

NAME

FIRM

ADDRESS

CITY STATE

we hear that

(Continued)

are at 1899 Webster St. Birmingham, Mich. Mr. Root is the author of several articles which have appeared in *American Artisan*.

► **JOHN W. CRAIG** has been elected a vice president of the Westinghouse Electric Corp. He has also been named general manager of its Electric Appliance Divisions which consist of plants at Mansfield, Columbus, Newark, O. and Springfield, Mass., and which manufacture such products as water heaters, room air conditioners and dehumidifiers. Prior to joining Westinghouse, Mr. Craig was vice president of Whirlpool-Seeger Corp.

► **O. A. SUTTON**, president of the O. A. Sutton Corp., was recently elected to the board of directors of the National Association of Manufacturers. Mr. Sutton will serve as a director for the state of Kansas.

► **THE KANSAS CITY** district office of General Controls Co. has moved into new and larger facilities at 2904 Oak St., Kansas City, Mo.

► **METAL GOODS CORP.** has opened new plants in St. Louis, Wichita, and Memphis. The St. Louis plant,

located at 8800 Page Blvd., includes a warehouse and a three story office building. Nelson Hower is district manager. The Wichita plant, on the corner of Madison and Industrial Aves., is headed by Clark Brown as district manager. Grover C. Meek, Jr., has been appointed district manager of the Memphis plant, which is located at 1970 Latham.

► **HOWARD POEL** of Poel and Bailey Heating Co., Muskegon, Mich. won the \$100 first prize in the contest recently conducted by Armstrong Furnace Co. for the best letter describing a salesman's use of the company's "Visualizer" in selling a heating system. Second prize of \$50 went to M. S. White, Professional Heating Service, Greeley, Colo. Helen Van Ameyde of H. V. Perry & Co., Dearborn, Mich. and R. B. Lawrence, Welch Brothers, Schenectady, N. Y. were third and fourth prize winners.

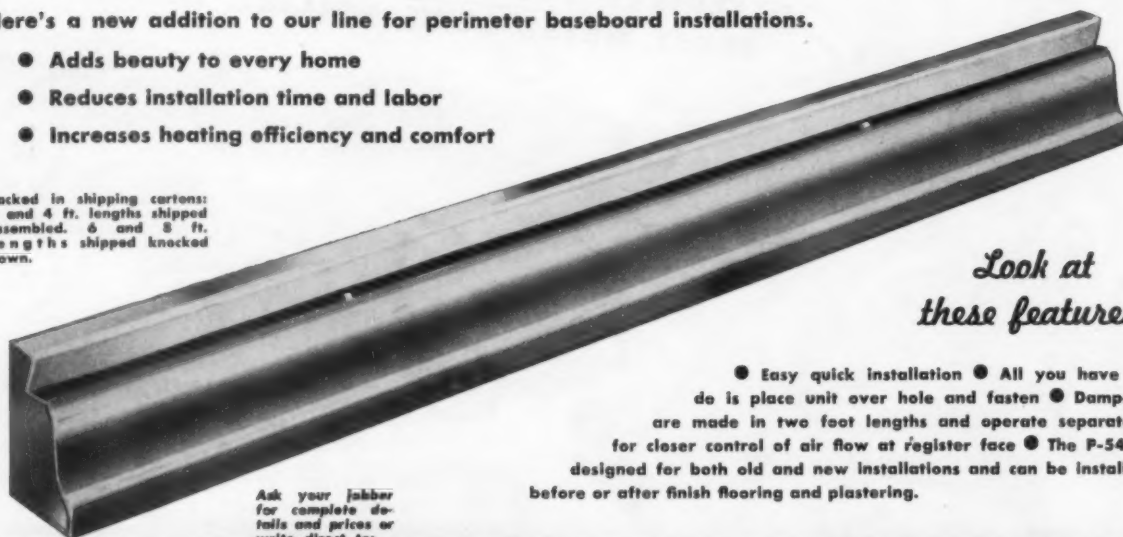
► **LAWSON VAN RIPER** has been appointed vice president of the Ansonia Div., American Brass Co. He succeeds Arthur W. Wilkinson, who retired as vice president last May. Mr. van Riper joined the company in 1928, and has held sales positions in its Philadelphia, New York and Waterbury offices. He has been manager of the Ansonia Div. since 1954. James F. Ackerman, formerly vice president in charge of the Torrington Div., has been named a vice presi-

For greater heating efficiency and savings **specify this NO. P-54 BASEBOARD DIFFUSER**

Here's a new addition to our line for perimeter baseboard installations.

- Adds beauty to every home
- Reduces installation time and labor
- Increases heating efficiency and comfort

Packed in shipping cartons:
2 and 4 ft. lengths shipped
assembled. 6 and 8 ft.
lengths shipped knocked
down.



Ask your jobber
for complete de-
tails and prices or
write direct to:

*Look at
these features:*

- Easy quick installation ● All you have to do is place unit over hole and fasten ● Dampers are made in two foot lengths and operate separately for closer control of air flow at register face ● The P-54 is designed for both old and new installations and can be installed before or after finish flooring and plastering.

THE A & A

REGISTER COMPANY

8327 CLINTON RD. CLEVELAND 9, OHIO

NEW RADIANT direct oil fired WATER HEATERS...

GLASS-LINED model GL-30

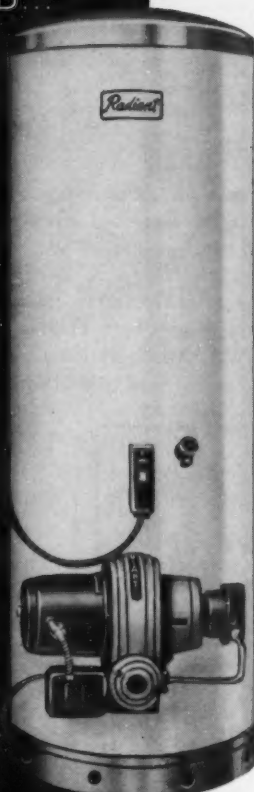
FOR HOTTER WATER—
CLEANER, FASTER!

- ◀ Glass-lined boiler-plate steel tank will withstand Hydrostatic pressure of 300 lbs. psi.
- ◀ Heavy-duty Fibreglas insulation prevents heat loss.
- ◀ Magnesium anode assures rust-free water.

COPPER... model CP-30

FOR MAXIMUM EFFICIENCY—
LONGER LIFE!

- ◀ Features solid copper tank encased in heavy-gauge high strength steel to withstand Hydrostatic test pressure of 525 lbs. psi.
- ◀ Cleaner water assured... always flows through Never-Rust copper.
- ◀ No heat loss — heavy Fibreglas insulation completely covers the tank.



STYLED FOR STREAMLINED GOOD LOOKS!

You'll like the attractive baked enamel finish and smart custom styling of both new Radiant hot water heaters. They blend with the decor of modern kitchens and recreation rooms.

LOWER COST HOT WATER!

Both new Radiant hot water heaters are equipped with famous Radiant Oil Burners for efficient oil firing... for heating water at lower cost.

Write for complete literature on all Radiant products.

RADIANT UTILITIES CORP.

8817 18th Ave., Brooklyn 14, N. Y.

Quickdraft



Commercial models for smoke outlet diameters 12, 14, 16, 18, 20, 22, 24 and 30 inches.

22 INCH
MODEL
SHOWN

CURES NATURAL DRAFT TROUBLES

Increasing concentration of carbon and sulphur dioxides in the atmosphere, recently reported by scientists, handicaps ordinary chimneys by decreasing natural draft (CO_2 is 55% and SO_2 is 225% heavier than air) ... and by demanding more draft because additional air is required to provide sufficient oxygen. In addition, current trends constantly demand more draft ... (1) new fuels that require more oxygen ... (2) longer flue travel in furnaces and boilers. As a result, more and more heating plants operate at low efficiency because of gravity draft troubles.

WITH POWER DRAFT THAT ASSURES HEATING PLANT EFFICIENCY

... No Fans or Motors in Smoke Line

Quickdraft power draft stops sooting, eliminates chattering, dries wet chimneys and greatly increases combustion efficiency. It does not obstruct smoke line with fans or motors. Quickdraft assures top performance from old and new heating plants. All models are approved by Board of Standards and Appeals, New York City. Write today for details.



Residential models for smoke outlet diameters 6, 7, 8, 9 and 10 inches.

N-285-QD



Quickdraft COMPANY

Canton 1, Ohio

QUICKDRAFT COMPANY

Dueber-Hampden Building
P. O. Box 87-D
Canton 1, Ohio



we hear that

(Continued)

dent of the company and has been transferred to its headquarters in Waterbury. William C. Knoeppel, previously manager of the Torrington Div., has been appointed vice president of that division. Frank H.



CLUB CAR INTERLUDE at the recent national sales meeting of Temco, Inc. featured a game of quiz poker. Here W. S. Graham presents the company's national advertising campaign for 1956, using a question and answer technique that enabled salesmen giving the right answers to build up their poker hands

Ballantyne has been named vice president of the French Small Tube Div., succeeding Leon H. French.

Scott H. Patterson has been appointed vice president in charge of the Buffalo Div.

► TEMCO, INC. used railroad props to set the stage for its recent four day national sales meeting. The program was printed in the form of a railroad ticket, and F. D. Hart, executive vice president, welcomed the salesmen aboard for "the sales ride of their lives." Cecil Oakley, sales manager, conducted the meeting and outlined sales and promotional plans for 1956. A highlight of the program was a two-day training seminar on the company's new central heating and air conditioning equipment.

► F. S. CORNELL has been elected executive vice president and a director of the A. O. Smith Corp. Mr. Cornell, formerly vice president and general manager, has been with the firm since 1945.

► THE TRANE CO. plans to build a 65,000 sq ft engineering building to provide space for its product and design departments which, according to D. C. Minard, president, "have outgrown their present quarters due to the increased activity of the company in this area of its operation."

► CARNES CORP. has recently completed the addition of 60,000 sq ft of floor space to its plant at Verona, Wis. The additional space will include both warehousing and manufacturing facilities.



benefit 3 ways! INSTALL PATCO AIR BASEBOARD For Cooling For Heating

(1) You will lower YOUR installation costs, (2) get more jobs done and (3) make your customers more comfortable when you install PATCO AIR BASEBOARD. That's been the experience of contractors everywhere because:

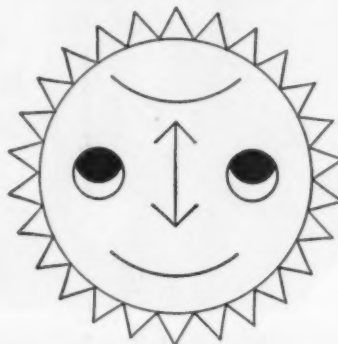
1. you don't have to waste time handling and fitting bulky, rectangular duct work.
2. 4" or 5" round pipe (inexpensive industrial downspouting in 10' lengths) or standard duct work can be used with the PATCO connectors.
3. you simply nail the baseboard to the studs, snap on the diffuser face.
4. customers get pleasing appearance, greater economy, cleanliness, silent, draft-free operation.



Get complete details today and, remember, PATCO AIR BASEBOARD has all-around use in new or old homes, one story or two with or without basements.

PATCO MFG. CO.
231 N. 3rd St., Philadelphia 6, Pa.

The tragic fact, our doctors tell us, is that every third cancer death is a needless death... twice as many could be saved.



LET'S LOOK AT THE BRIGHTER SIDE

Many thousands of Americans are cured of cancer every year. More and more people are going to their doctors *in time*... To learn how to head off cancer, call the American Cancer Society or write to "Cancer" in care of your local Post Office.

American Cancer Society





...and a happy one!

It's a happy day for you and your customer when you install a '56 Aquatower with new MarClad finish because it's packed with *more eye appeal* and designed to give *longer service* than any other packaged cooling tower!

MarClad is a two-coat, high-temperature plastic finish that resists rust and corrosion . . . defies the attack of acids, alkalis and water. MarClad protects Aquatowers from damage in storage . . . on their way to the job and during installation . . . and insures that they will last to a ripe old age. What's more, MarClad's soft gray color lends that compatible look that is so pleasing to owners.

From start to finish, '56 Aquatowers are a better buy than ever before. Back of each tower stands the Marley reputation and guarantee that protects you, as well as the owner. With each tower comes complete "how-to-do-it" installation instructions to make your job easier. Write today for the latest literature, or see your Marley supplier in any major city.



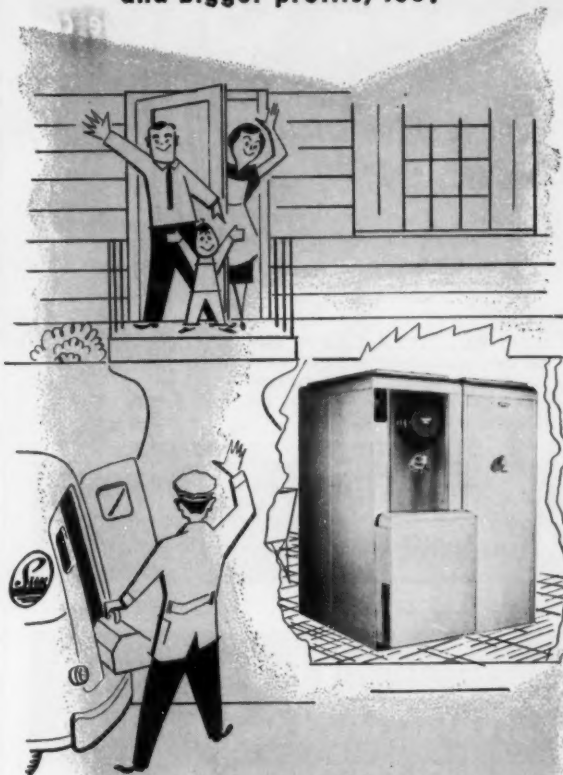
"Nothing cools as well as water . . . nothing cools water like a Marley Cooling Tower."

The Marley Company

Kansas City, Missouri

Sure way **TO MAKE LASTING FRIENDS**

and bigger profits, too!



Patten

FURNACES • AIR CONDITIONING

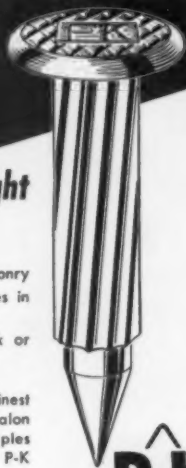
No matter how large or small your business may be . . . its continued success depends upon *satisfied customers!* Patten's high-quality line of furnaces and air conditioners have the built-in advantage of *satisfaction guaranteed* . . . your most valuable sales feature. Sell SUN Fuel-Master . . . and make LASTING FRIENDS with all your customers.

Patten . . . The complete line that meets any heating or cooling requirement. Write for full details today!

The Quality Line at Competitive Prices



P-K hardened *Masonry Nails*
do the work of plugs and expansion bolts
... at a fraction
of the cost!



**Built to drive straight
and stay tight**

- No pilot holes needed in soft masonry
- Drive easily into pre-drilled holes in harder materials
- Won't loosen—even under shock or vibration

IF IT'S P-K... IT'S O.K. For the finest fasteners made, insist on Parker-Kalon... the name you can trust. Get samples from leading distributors who stock P-K Masonry Nails... or write:



PARKER-KALON fasteners

Parker-Kalon Division • General American
Transportation Corporation • Clifton, New Jersey

**Convert Gravity Furnaces With A
CIRCULATAIRE Bonnet Blower**



CIRCULATAIRE ELIMINATES COLD ROOMS,
BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem of "hard to heat" rooms, boosts warm air quickly through all the heating pipes. CIRCULATAIRE is easily and quickly installed without removing the bonnet. Packaged unit includes motor and fan control. No new sheet metal work required, no changing of cold or warm air pipes, no baffles to be built. The CIRCULATAIRE is rigid, quiet and efficient in operation.

NOW READY—New CIRCULATAIRE Sales Aids add effectiveness to selling interview, conserves valuable selling time and increases sales.

A COMPLETELY PACKAGED UNIT
Nothing for the dealer to furnish except limited amount of labor.



GET THE FACTS TODAY! WRITE...

CIRCULATAIRE DIVISION OF CORLETT-TURNER CO.
1007 S. KOSTNER AVE., CHICAGO 24.

appointments . . .



Ray A. Reed



Richard H. John

► **RAY A. REED** as district manager for the Minneapolis territory of the Janitrol Heating and Air Conditioning Div., Surface Combustion Corp. Mr. Reed, who has been acting district manager, will direct sales and service activities in Minnesota, North Dakota, Montana and parts of South Dakota, Wyoming and Wisconsin. **Richard H. John** has been appointed sales representative handling heating and cooling equipment in western Michigan. His office will be in Grand Rapids.

► **PAUL O. PENN** as assistant to the president of Penn Controls, Inc., a newly created position. In his

The MODERN Lighter Tube
With the Slanting Blue Flame

**Today's Great Contribution
to Gas Appliance Safety and
Dependability!**

To safeguard all users of gas-fired heating equipment and appliances against hazardous lighting methods, more and more manufacturers are engineering the MODERN Lighter Tube into their units. Utilities and wholesalers too, strongly favor the MODERN Lighter Tube as a component

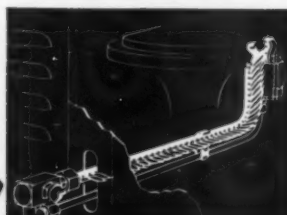
part of all gas-fired units. Dealers recognize it as a vital sales feature. Available in aluminum or stainless steel 3/4 O.D. tubing.

The MODERN Lighter Tube offers the utmost in . . .

- ★ SAFETY
- ★ DEPENDABILITY
- ★ SIMPLICITY
- ★ CONVENIENCE



**PERFECTED
OUTSIDE
LIGHTING**



MODERN MATERIALS CO.
NORTHVILLE MICHIGAN

appointments

(Continued)

new capacity Mr. Penn will be responsible for the development of policies and procedures for improved coordination of sales, engineering and manufacturing functions. He will continue to represent the company in trade association technical groups and industry advisory committees. Mr. Penn joined the organization in 1930. Most recently he has served as assistant to the vice president-director of sales.

► ALLEN GEORGENSON as sales promotion manager of the Columbus Div. of Lennox Industries Inc. Mr. Georgenson will be in charge of the division's advertising program and will formulate plans for dealer promotions and displays. Allen Creekbaum has been named an air conditioning field manager for the Columbus Div. Mr. Creekbaum joined the organization in 1933 as a dealer in the Syracuse, N. Y. Div., and in 1953 became district manager of the southeastern Illinois region. Also named an air conditioning field manager for the Columbus Div. is Harold De Long. Mr. De Long joined the firm in 1951 as a field service engineer. Norman Ray Garrett, formerly a heating and air conditioning estimator for Bartlett Roofing and Sheet Metal Co. of Lima, has joined the Lennox company as a sales representative.



STANDARD IN THE FIELD

Superior features of Tharco—

- No Shrinking
- No Cracking
- No Checking

THARCO is available in either black or light gray in 1-pound cans to 350 pound drums.

ORDER FROM YOUR JOBBER

THE ARMSTRONG COMPANY
241 S. Post Street • Detroit 17, Michigan



P-K[®] hardened Screwnails

give you nail driving speed
plus screw
holding power

Fasten sheet metal to wood... wood to wood in seconds!

For the finest fasteners made, insist on Parker-Kalon... the name you can trust. Get samples from leading distributors who stock P-K Screwnails . . . or write:

IF IT'S **P-K** IT'S O.K.

PARKER-KALON[®] fasteners
Parker-Kalon Division • General American
Transportation Corporation • Clifton, New Jersey

Now

10 PRODUCTION TOOLS

COMPLETE IN ONE TOOL

FOR \$460⁰⁰ ONLY

F.O.B. WAUKEGAN, ILL.

No. 1826

SMITH'S 180° Universal Brake combines the usefulness of 5 familiar tools with 5 new ones as illustrated below. . . . This brake will silence a lot of hammering in the average sheet metal shop, at a profit! . . . It is adapted to permit selective bending of portions of a work piece without restriction! . . . It will handle 18 gauge mild steel 26" wide to 7 gauge 1 1/4" wide, at any angle, up to 180° in one operation! . . . It has adjustable angle stops and back gauges to assure precise duplication of work pieces, making it a very valuable production tool. Write for more information.

THE PRODUCT OF 5 FAMILIAR TOOLS

THE PRODUCT OF 5 NEW TOOLS

R. E. SMITH 1124 ELIZABETH WAUKEGAN, ILL.



Kwik-WAY

**DAMPER
REGULATOR
SETS**

**FOR SOUND
ECONOMY**

**No. 69 SET
SINGLE BEARING
for SMALL DAMPERS**

Retractable bolt and quick, easy means of fastening bearing are among features that make this the most convenient and economical set available.



ONE BLOW SETS BEARING SECURELY

**No. 70 SET
for LARGER DAMPERS**

Identical with No. 69 except with 2 retractable bolt bearings.



HART & COOLEY MANUFACTURING CO.
500 EAST EIGHTH ST., HOLLAND, MICH.

**LOOK how many jobs
AN I-R
IMPACTOOL
WILL
DO.....**



- RUN NUTS
- REAM
- DRIVE SCREWS
- SAW HOLES
- DRILL
- WIRE BRUSH
- TAP
- BORE WOOD
- DRILL MASONRY
- DRIVE STUDS

Want real versatility . . . real power and speed for just about any job a portable power tool can do? Grip one of Ingersoll-Rand's five great Electric Impacttools—2U, 4U-SD, 5U, 8U and 34U—a size for every job. If you work on metal, wood, masonry or other materials, you'll save time, hard work and money when you own an Ingersoll-Rand Impacttool. Ask your Ingersoll-Rand Distributor for a free demonstration.

Ingersoll-Rand
11 BROADWAY, NEW YORK 4, N.Y.

appointments

(Continued)

► **GEORGE B. McCLELLAN**, formerly sales promotion manager, as sales manager of William Wallace Co. Mr. McClellan has been associated with the company for the past nine years. Prior to that he was active in the wholesaling phase of the heating business.



George B. McClellan



H. C. Galleher

► **H. C. GALLEHER** as sales promotion manager for Conco Engineering Works, Div. of H. D. Conkey & Co. In his new position Mr. Galleher will direct the development of an expanded sales promotion program for heating and cooling equipment.

► **GEORGE B. MOSELEY** as vice president in charge of sales for Chase Brass & Copper Co. Inc., a subsidiary of Kennecott Copper Corp. Prior to joining the Chase organization Mr. Mosely was general sales manager of the Firestone Tire & Rubber Co.

► **JOSEPH J. SULLIVAN** as sales manager, room air conditioning, for York Corp. Mr. Sullivan was previously manager of sales management development of the Radio and Television Div., Sylvania Electric Products, Inc.

► **W. F. WRIGHT, JR.** as national sales manager of the Gas Air-Conditioning Div., Cobell Industries, Inc. Prior to his recent appointment, Mr. Wright was with the air conditioning division of Servel, Inc.

► **C. A. MILLER** as heating and air conditioning sales manager for Mission Appliance Corp. Mr. Miller brings to his new position 19 years of experience in the industry.

► **CHARLES H. HALLETT** as manager of the Wallingford, Conn. plant of Joseph T. Ryerson & Son, Inc. The Wallingford plant was recently purchased from the Follansbee Metals Corp. Mr. Hallett joined the company's Buffalo plant in 1941, and at the time of his recent promotion was assistant sales manager of the Chicago office. William K. Underhill has been named sales manager of the Wallingford plant. He was previously assistant plant manager at New York. Loren B. Clay has been appointed manager of tubular products and cold finished bar sales for the company's

Makes Boiler Cleaning EASY!

650 Flexible WIRE BRUSH

For Rapid Cleaning of Large Flat or Curved Surfaces!

Wide sweep, long reach! Gets into corners and crevices, too!



Ask for it At Your Favorite Wholesaler

Block, 6" x 3/4"
Wire Length, 3"
Handle Length, 11"

WORCESTER BRUSH AND SCRAPER CO.
Division of
MASON-WORCESTER BRUSH CO.
38 AUSTIN ST. WORCESTER 1, MASS.



LITTLE GIANT CONDENSATE REMOVER

Specially designed for the removal of condensate from mechanical refrigeration air conditioning units. The Heart of this Little Giant Condensate Remover is the Famous Pump, which is hermetically sealed in oil . . . needs no added lubricant . . . is Sturdy and permanent . . . exceptionally free from interruptions in service . . . is fully submersible . . . and motor windings can not become wet. Also useful in many other sump installations . . . performs a necessary service wherever condensate must be drained.

- Positive displacement electric switch & float
- Corrosion resistant finished throughout
- Completely automatic
- Small and compact
- Available in 3 sizes
- Quiet in operation

Write today for catalog sheets, specifications and prices.

LITTLE GIANT

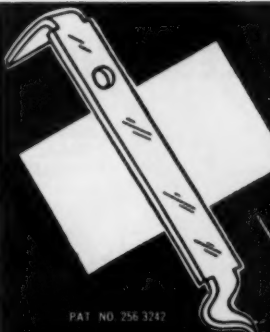
VAPORIZER CO., INC.
5101 Classen Blvd.
Oklahoma City, Okla.

or Consult your Nearby Dealer

NEW IMPROVED SQUARE DUCT HANGER

With new "Positive Lock" cam action feature . . . No Special Tools! Hammer does the Job! Available in six lengths.

PAT. NO. 256 3247



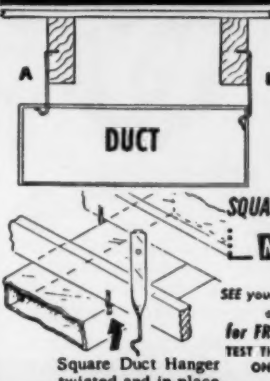
A. Round Pipe Hanger used when joist is offset from duct
B. Simple Application of Square Duct Hanger as shipped to you

AS LOW AS **2 1/2¢ EACH**

SQUARE DUCT HANGER No. 15

SEE your SUPPLIER or WRITE for FREE samples TEST THEM YOURSELF ON THE JOB!

Square Duct Hanger twisted and in place



- Sharp prong pierces
- Insert "Positive Lock" — tap in place
- Drive sharp prong into joist

A. M. HEXDALL CO. Manufacturers of Sheet Metal Specialties
MORRIS, ILLINOIS

NEW Comfortaire

LINE OF FORCED AIR FURNACES DESIGNED FOR SMALL HOMES:
4 MODELS — 70,000 TO 170,000 B.T.U.

Comfortaire H.C. models produce abundant warmth, operate quietly, and are built to precise specifications. Draft diverter built into element allows extra heating surface.



"BABY SAFE" Circulaire

VENTED RECESSED WALL HEATERS IDEAL FOR YOUNGSTERS:
8 MODELS — 15,000 TO 60,000 B.T.U.

Circulaire means quick, fully circulating heat, floor to ceiling comfort, low installation, operational and maintenance costs with Hammel 10 year guarantee.



Write for Catalog

Hammel

RADIATOR ENGINEERING CO.

Owned and Operated by A. S. Martinson and Associates
3348 Motor Ave. Los Angeles 34, CALIF.

BEVERLY *Pneumatic* THROATLESS SHEAR



CAPACITY
3/4" MILD STEEL
10 GA.
STAINLESS

**FASTER,
EASIER CUTTING**
to any Shape!

- Compactly built for maximum visibility and efficiency
- Operates on 35 to 150 PSI air pressure
- Adjustable power and return stroke length and speed

Beverly Pneumatic Shears combine all the advantages of Beverly Throatless Shears with fast, effortless cutting action through air cylinder operation. Air operation speeds work, permits accurate cutting to a pattern or template, as operator can concentrate on guiding work through the shear. Flow control valves permit precise adjustment of stroke speed; adjustable actuating arm controls stroke length. Foot Switch permits operator to use both hands on the work piece. Operates on 110V. 60 cycles AC and 35 to 150 PSI air pressure.

See your nearby Beverly Distributor
Write for catalog sheet and complete details.

BEVERLY SHEAR MANUFACTURING CO.
3020 W. 111th STREET • CHICAGO 43, ILLINOIS



ORNAMENTS

STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING

89 ADAMS STREET

BROOKLYN, N. Y.

WHO-O-O

**MAKES CONTROL
INSTALLATION
EASIER?**

See pages 30-31

appointments

(Continued)

Los Angeles plant. John R. Fennie, former manager, has been assigned to the sales district comprising the Inglewood, Gardena and Compton, Calif. areas. J. W. Stevens has joined the sales staff and will cover the Santa Monica, Culver City, West Los Angeles and Beverly Hills areas.

► MAURICE EASTIN as manager of sales for the Perfex Div. of General Controls Co. Mr. Eastin had been sales manager of the controls division of Perfex Corp. of Milwaukee until the acquisition of the division by General Controls Co. His new offices are in Skokie, Ill. George A. Williams, Jr. has been named manager of the company's Detroit factory branch. R. C. Servat, formerly manager of the New Orleans branch, has been appointed manager of the Houston branch. Byron B. Spinney has been named regional representative for the company's New York regional office with headquarters in Long Island City. Mr. Spinney will assist architects and builders in securing information on new developments in heating and cooling controls.

► M. E. KELLEY as representative in Iowa and surrounding states for Viking Air Products, Div. of National-U.S. Radiator Corp. Mr. Kelley has been a sales engineer in the Iowa area for the past five years.

► PAUL R. O'KANE as representative in the Indiana and Kentucky area for Wm. Steinen Mfg. Co. Thornie House will represent the company in western Pennsylvania and the state of Ohio.

► RICHARD J. HOLLMEYER as Cincinnati district sales engineer for Dravo Corp. Mr. Hollmeyer will handle the sale of commercial warm air space heaters in Kentucky, southern Ohio and southern Indiana.

► ALVIN R. CLOSE as heating and air conditioning representative in the Toledo territory for McQuay Inc. Mr. Close has been a manufacturers' representative since 1952 and prior to that was a research engineer with Battelle Memorial Institute.

Obituary

H. D. Conkey

H. D. CONKEY, president and founder of H. D. Conkey & Co. and its divisions — Conco Engineering Works, Field Control Div. and Conco Building Products, Inc. — died at Miami, Fla., Sunday, January 15. He was 78 years old. He is survived by his wife and one son, Robert W., who is executive vice president of the Conkey organization.

YOUR BEST INVESTMENT
LEVER **WHITNEY** PUNCHES

**PORTABLE
HAND
OPERATED
PUNCHES AND
SHEARS.
A TOOL FOR
EVERY
PURPOSE.
LEADERS
SINCE 1907**

Please Write
Today for
Literature

See Your Jobber

NO. 91 BENCH PUNCH



This tool also can be obtained with 10", 18", and 24" depth of throat. All parts including extra punches and dies are interchangeable. As an extra, the notching attachment will notch 1-1/2 x 1-1/2 x 1/4" angle iron for making of right angle bends. Also punches angle iron and channel iron. Extra punches and dies in rounds, squares, ovals, rectangulars or special shapes and sizes.

Capacity
1/2" hole through 1/4" iron
3/4" hole through 3/16" iron
2" hole through 1/2" iron
Weight 82 lbs. Depth of throat 5" Punches and dies 1/2" to 2"



WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

Use *Stic-Klip*® for
Insulation Installation

ON AIR CONDITIONING AND VENTILATING SYSTEMS
FOR COLD STORAGE PLANTS, BUILDINGS AND SHIPS.



- | | |
|-----------------------------|---------------------------------------------------|
| 1 TYPE B with Locking Plate | 5 SPRING TUBING CLIP (1/4" and 3/8") |
| 2 TYPE B | 6 HOLDING PLATE used with Type A and B |
| 3 TYPE A | 7 TYPE N with Speed Washer |
| 4 TYPE S ADHESIVE | 8 INSERT BASE Securing Signs, Wall Cabinets, etc. |

Stic-Klips permanently bind almost any insulating material to masonry, wood, metal — flat, corrugated, curved, unusual-shaped. This modern method eliminates drilling, puncturing metal — saves time and money.

For illustrated booklet on any of these applications,
write Dept. AA

Stic-Klip® MANUFACTURING CO.
52 Regent St., Cambridge 40, Mass.

Cut Installation Costs!
One hammer blow
permanently rivets



STANDARD
E-Z-ON
DAMPER
REGULATOR

E-Z-ON

E-Z-ON Damper Controls are easily, quickly installed to save you time and money. E-Z-ONS lower initial cost offers you additional savings and extra profits. Start saving money now. . . . Call your jobber today!

LEADING JOBBERS STOCK "EZ-ONS"

In Canada — THERMIDAIRE CORP. LTD. Toronto

M. A. GERETT CORP.

724 WEST WINNEBAGO STREET, MILWAUKEE 5, WISCONSIN

NEW IMPROVED Vaporite
Automatic Humidifier



Fits any straight side
warm air furnace

Series 555

**Corrosion Resistant
Stainless Steel
Vapor Pan 4" x 15"**

**ONE SIZE . . . ONE KIT ASSURES LOWEST
COST INSTALLATION AND MINIMUM
INVENTORY EXPENSE**

Vaporite No. 555 Humidifier comes completely assembled in one package. No extras to buy . . . no parts to assemble . . . no extra holes to cut . . . no pan leveling or tricky mounting.

NEW IMPROVED VALVE — Provides more positive drip-feed thermostat operation. Water drips fastest when furnace is hottest . . . pan is dry when furnace is cold. Adjustable for precise vaporization needs of each installation.

Write for Catalog A-2

AUTOMATIC HUMIDIFIER CO., Cedar Falls, Iowa

PERFORATED METALS FOR EVERY INDUSTRIAL USE

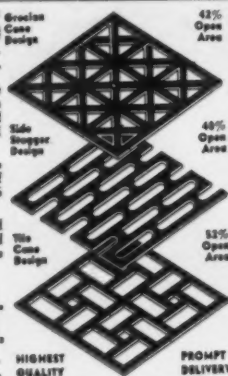
The "Ornamental" light-gauge designs here illustrated are only a few of the many you can choose from in our new Catalog 39 and we are always pleased to quote on original designs or special work of any kind.

For larger unit-openings, using metals up to 1/4" in thickness, we offer a wide variety of equally attractive designs in our Catalog 36 on Diamond Architectural Grilles.

Send us your blueprints. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.

DIAMOND MANUFACTURING CO.
Box 34 WYOMING PENNA.
(Wilkes-Barre Area)

Sales Representatives in all principal cities.
Consult Your Classified Telephone Directory.



Address Changing? Tell Us AT ONCE!

A new postal regulation relating to the handling of undelivered mail may result in some issues of *American Artisan* being thrown away instead of being returned to us — as they have been in the past — for remailing to your new or correct address.

To avoid missing any issue of *American Artisan* it is more important that ever to report both your new and old address to us and your post office. Deadline is the 18th of the preceding month for the next issue. Send changes — and new local postal delivery zone — to

AMERICAN ARTISAN
6 N. Michigan Ave., CHICAGO 2, ILL.

Classified Advertising

Rates for classified advertising are 12 cents for each word, including heading and address. One inch \$6.00. Count nine words for keyed address. Minimum \$2.00. Closing date 20th of month preceding publication.

situations open . . .

Experienced man to write descriptive material on the selling and sales promotional activities of dealers and contractors. Opportunity to use initiative and to develop promotional programs. Midwest location. Some traveling required. Submit complete resume with application, giving age, experience, previous employers and salary expected. Address Key 1031, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

Manufacturer of automatic heating equipment is looking for sales representative calling on heating and sheet metal dealers in Southern Wisconsin, Southern Minnesota, Iowa and Northwestern Illinois. Company offers complete line of automatic heating equipment and a very attractive sales program for franchised dealers. Address Key 1028, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

for sale . . .

1/4" Ribbed Wire Glass, Stock Sheets, 30c sq. ft., cut sizes slightly extra, plus boxing. F.O.B. our warehouse. Atcheson Glass Co., 920 Main St., Buffalo, New York.

FOR SALE—Skelly Industrial stoker with automatic controls, 1200 lbs. per hour hard or soft coal, excellent condition, priced to sell. Address Key 1029, American Artisan, 6 North Michigan Ave., Chicago 2, Illinois.

business opportunity . . .

Partner or will sell, Roofing and Sheet Metal Shop well equipped, 25 years established same location Queens, L. I., N. Y. Wonderful opportunity for right man. Open for investigation. Give complete details in first letter. Address Key 1030, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

agents wanted . . .

Growing manufacturer of automatic heating equipment is seeking a man who has had sales experience in merchandising heating and air conditioning equipment to the heating and sheet metal dealer. Territory open in Southern Indiana and border cities and towns in Ohio, Kentucky and Illinois. Remuneration based on company furnishing travel expenses, salary and commissions. Address Key 1027, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

**LIGHT the TORCH
OF HOPE**



**HELP YOUR
HEART FUND**

Be Control-Wise!

See pages 30-31

Hard to
SODER —
Metals

Aluminum, Cast Iron
Stainless Steel
Galvanized Metals



FLUXES
SODERING
BRAZING & WELDING

L. B. ALLEN CO. INC. Chicago 31, Ill.

6702 BRYN MAWR AVENUE, CHICAGO 31, ILL.

agents wanted . . .

Sales Agents Wanted—National Manufacturer of pre-fabricated Pipe, Duct and Fittings for residential heating and cooling systems desires manufacturer's agents to sell to wholesale plumbing and heating houses. Areas available: Va., N. C., S. C., Ala., Western Penna., Eastern Penna., New England, State of New York, and N. J. Real opportunity for right men. Please write complete details. Address Key 1026, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

DISTRIBUTORS WANTED

There's more business, more profits for you when you handle our complete line of professional shears, trimmers, and tinners' snips! Here's why: established name, exclusive product features, and promotional aids give you a running jump on competition! Write us today and we will rush you all details.

W. H. COMPTON SHEAR COMPANY

318 Camden Street Dept. C3 Newark 3, N. J.

Buy

**U. S. SECURITY
BONDS
NOW!**

SERVICE SECTION

Rates for display space in the Service Section are \$12.00 per inch per insertion. One-inch minimum space accepted. Closing date — twentieth of the month preceding issue.

This section represents an ideal opportunity for manufacturers to get their messages across to readers of a national publication in their field. Whatever you make or sell, you'll find a large, receptive audience, easily reached at a minimum outlay. Plan now to move your products quickly and economically with consistent advertisements in this section.

Drive Cleat Notcher



Handles up to 3" wide, 22 ga. or lighter. Hand or foot operation. Mounts on bench, or on job with clamps, or bolts and screws.

HANDY TOOLS AND EQUIPMENT

New Clip Punch



For fastening slips or seams on ducts. Will push a "half moon" through 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.

Quick Set Dividers



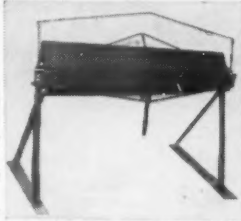
Fastest and most accurate on the market. Two sizes for circles up to 36" and 48". Removable steel points, or pencil. No center punch.

COMPLETE LINE OF SHEET METAL MACHINERY

REINER & CAMPBELL CO., Inc.

Post Office Box 5035, Newark 5, N. J.

VYKE BRAKES



30", 90 lbs.,	\$38.00
36", 100 lbs.,	43.50
48", 125 lbs.,	60.00
61", 150 lbs.,	72.00

SHEAR, Compound Handle, open end, 14 ga. \$29.00
15" Folder, 24ga., \$16.50, 36" Size 26ga., \$28.00,
16 ga. Sheet Metal Bender, 49" Size \$42.00.

Order direct or send for Catalog
VYKE MFG. CO.
4158-T Jason St., Denver 11, Colo.

RUBBER LADDER SHOES




for safe climbing
... Order today.
JOHNSON LADDER SHOE CO.
Eau Claire, Wisconsin

"CORRECT PRACTICE in OIL HEATING"

This special series covers every angle of oil burner work, including arrangement of shop . . . stocking parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . size combustion chambers . . . install thermostats . . . start burners . . . use testing instruments . . . and operate a service department. It contains, as well, a complete list of causes and cures of oil burner trouble — 57 pages of practical helps. Send \$1.00 for a copy to the address below. KEENEY PUBLISHING COMPANY, 6 No. Michigan Ave., Chicago 2, Ill.

ADJUSTABLE ELBOWS
Registers and Grilles
Deliveries from Stock



Juniper Elbow Co. Inc.
72-15 Metropolitan Ave.
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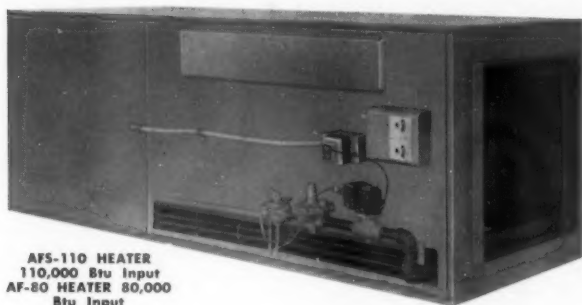
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